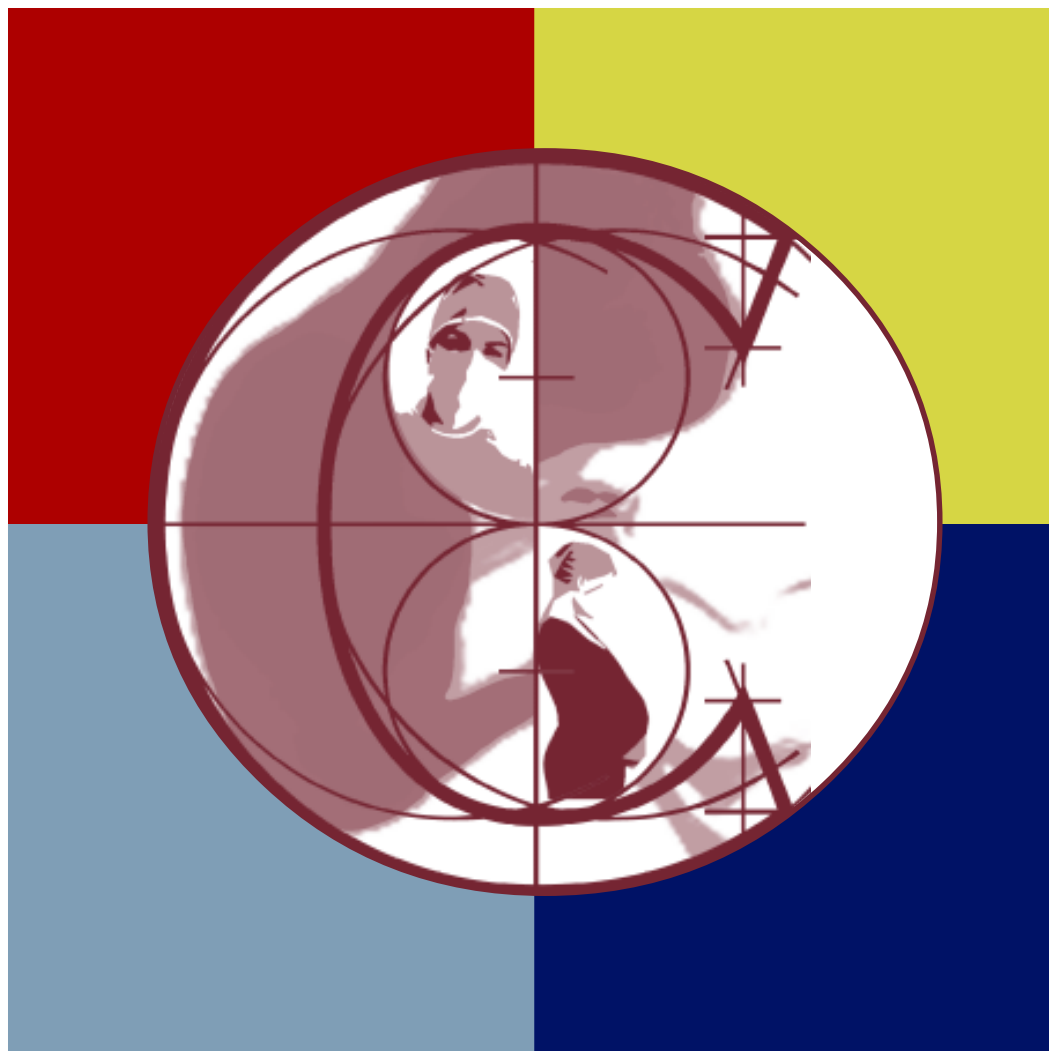


Cesarean Section Deliveries in Utah Hospitals, 1992-1997



Utah Department of Health
Office of Health Care Statistics

Cesarean Section Deliveries in Utah Hospitals, 1992-1997

Office of Health Care Statistics

October 1999

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I. Introduction

Executive Summary

Delivery of an infant by cesarean section (c-section) can be lifesaving for the fetus, mother or both. That benefit along with other factors, resulted in the rate of c-section delivery in the U.S. increasing to about 25% of all deliveries in 1988, a five-fold increase from the mid-1960s. That rate was substantially higher than rates in other developed countries which had comparable or better birth and maternal outcomes, suggesting that some c-section deliveries were being performed unnecessarily. Concerns about both the health and economic impact of over-utilization of this surgical procedure have prompted efforts to reduce the c-section delivery rate during the 1980s and 1990s. More recently, concerns about adverse effects of efforts to reduce the c-section delivery rate have also been voiced [4].

C-sections are the most frequently performed major surgical procedure in Utah and the U.S. Utah's c-section rate has consistently been lower than the national rate. However, despite the low relative rate, the variance in c-section rates among hospitals, payers, and patient factors indicates that there is room for improvement. Reducing c-section rates has policy implications as one-third of the babies born in Utah are paid for by Medicaid, which is funded by state and federal dollars. Additionally, as insurance rates increase, potentially unnecessary treatments will be more closely scrutinized.

This report addresses the latest information about c-section rates and trends, patient and hospital factors associated with higher c-section rates, and suggests opportunities for further study to understand why wide variation in c-section rates exists -- the first step in reducing the number of c-sections performed each year. Although the overall c-section delivery rate cannot determine inappropriate use, variations (by year, provider, or patient characteristics) may help identify areas where unnecessary c-sections can be reduced.

This report is based on data from the 1992-97 Utah Hospital Discharge Database compiled by the Office of Health Data Analysis under the Health Data Authority Act. This information may be used as a resource to guide quality improvement within hospitals and policy decisions in the public and private sector.

Some notable findings are listed below.

- In Utah, the overall c-section rate has declined from 17.7% in 1993 to 15.9% in 1997, which is roughly one percentage point higher than the Healthy People 2000 objective of 15.0%.
- The primary c-section rate for Utah of 11.2 in 1995 was lower than the national rate (14.7) by 3.5 percentage points. It is less than the Healthy People 2000 goal of 12 percent. Primary c-sections accounted for 60% of all c-section deliveries in Utah.
- In Utah in 1995, the rate for repeat c-section deliveries was 63.8 per 100 hospital deliveries with at least one previous c-section compared to the U.S. rate of 72.5 repeat c-sections per 100 hospital deliveries for the same year. The rate of repeat c-section delivery in Utah is already lower than the Healthy People 2010 target of 65 repeat c-sections per 100 hospital deliveries with at least one previous c-section. Repeat c-section deliveries accounted for 40 percent of all c-section deliveries in Utah.
- In Utah, lengths of stay (LOS) were substantially greater for c-section deliveries with and without complications (4.3 days, 3.2 days) than for vaginal deliveries (1.5 days), despite a decreasing trend in average LOS. Even though the average number of hospital days has declined, hospital charges for c-section and vaginal deliveries increased by approximately 30 percent from 1992 to 1997.

- The most common indications for c-section delivery in Utah in 1992-1997 were previous c-section delivery (37.2% of all c-section deliveries), dystocia (29.7%), breech presentation (15.2%), fetal distress (8.2%) or other medical reasons (9.7%). Among those indications, the risk of c-section was highest for deliveries with breech presentation of which 90% were by c-section.
- For every 100 deliveries with an indication of a previous c-section, 63 were delivered by c-section. Six percent of all Utah deliveries were c-section with an indication of previous c-section.
- Dystocia was the most common of the conditions leading to c-section, occurring in 10.2% of hospital deliveries and accounting for 30.2% of all c-sections.
- Other factors that affect the c-section rate in Utah included maternal age, principal payer, area of mother's residence (Utah small areas) and individual hospital characteristics.
- The likelihood of c-section delivery increased as maternal age increased. rates were lowest for women younger than 18 and highest for women 35 or older.
- C-section delivery rates varied by principal payer. C-section rates for commercial insurance payers were slightly higher than the rates for public payers.
- Analyses conducted on 61 small areas in Utah based on mother's zip code of residence indicated a clear variation of c-section rates across small areas. Rates were highest for residents of Sevier/Piute/Wayne counties (24.0%), followed by Southwest District excluding Cedar City (23.6%), Tri-county (23.0%), and Juab/Millard/Sanpete Counties (20.7%).

- Hospitals showed considerable variation in volume as well as rates of c-section deliveries. Hospitals in rural counties, on average, had higher primary c-section rates (12.1 per 100 deliveries) than hospitals in urban counties (9.8 per 100 deliveries).
- The primary c-section rate was higher for hospitals with no obstetrician on staff (12.9 per 100 hospital deliveries) compared to hospitals with at least one obstetrician on staff (9.8 percent). The primary c-section rate was also higher for hospitals with no anesthesiologist on staff (12.8 per 100 hospital deliveries) compared with hospitals that had at least one anesthesiologist on staff (9.9 percent), and for hospitals with an annual delivery volume of less than 400 deliveries (12.5 per 100 hospital deliveries) compared to hospitals with an annual delivery volume of 400 or more deliveries (9.8 percent).

Background

Cesarean section (c-section) is the surgical delivery of a baby through an incision in the abdomen and the uterus. The procedure carries the risks associated with major surgery and the recovery time is longer than after a vaginal birth. "Cesarean Section Deliveries in Utah Hospitals, 1992-1997" is the revised, updated and more comprehensive version of an earlier report on c-section deliveries in Utah [1].

The term cesarean comes from the legend that Julius Caesar was born in this manner. C-section delivery has become the most frequently performed major surgical procedure in the U.S. and Utah. There were over 5,000 c-section births in Utah during each year in 1992-97. The Utah rate, 16.8% of all hospital births, was above the Healthy People 2000 objective of 15.0%. The rates of c-section deliveries in the U.S. increased from 4.5% in 1965 to a peak of 24.4% in 1988 [2, 3, 29, 37] and then decreased somewhat to 20.8% in 1995.

Among other factors, the increased c-section rate can be attributed to the improved safety of the procedure, improved diagnosis of complications associated with delivery, changing age composition of women

delivering babies, and litigation concerns. The decline in c-section rates since 1987 came as a result of improved physician awareness regarding the advantages of trial of labor and vaginal births after cesarean (VBAC), hospital efforts to reduce unnecessary c-sections, and cost containment efforts within health care systems (Healthy People 2010 draft). Despite efforts to avoid c-section births, c-sections are considered appropriate, and even crucial for high-risk births such as those involving multiple gestations, infants of large size, abnormal position of the fetus, or a mother's pelvis that is too narrow.

C-section births are associated with higher costs, longer hospital stays and greater risk of maternal morbidity. Patients who deliver by c-section and their newborns stay longer in the hospital and are exposed to risks associated with surgical complications and post-operative infections. Most women would prefer a vaginal delivery. However, when certain problems before or during the delivery put either mother or child in jeopardy, a c-section can be a life saving operation. Although this medical technology reduces maternal and infant mortality, the dramatic increase in use of this procedure has generated considerable concern. Some researchers have claimed that up to 50% of c-sections performed in the United States are unnecessary [5, 6, 7]. Critics have suggested that the decision to do a c-section may occur because of physician convenience or legal concerns of a potential malpractice suit from the delivery of an "imperfect" infant, instead of considering the best interests of the patient [6, 7]. A c-section increases the length of recovery for a mother and is associated with higher charges than a vaginal delivery.

The trial of labor has been found to be a safe and reasonable alternative to c-section in appropriately selected deliveries [8]. Unfortunately, these advances in knowledge and practice remain incompletely integrated into physician practice [9]. Widespread promotion and utilization of vaginal birth after c-section delivery could eliminate up to one-third of c-sections [10].

This report used data for deliveries that occurred between January

1, 1992 and December 31, 1997 in Utah Hospitals (see reference tables for hospital names). Only delivering women who were Utah residents were included in the analysis. The report is organized into six sections. Important findings are presented with the help of graphs and maps. Definitions of terms and formulas used in computation of rates appear in Appendix A. The detailed tables are placed in Appendix B at the end of the report.

II. Clinical Indications: Medical factors that predispose women to the risk of c-section.

The main indications for a c-section delivery are breech presentation, prior c-section delivery, dystocia or cephalopelvic disproportion, and fetal distress or “non-reassuring fetal heart rate tracing” (Figure 1) [4]. Not all patients with those diagnoses require c-section delivery (Figure 2). In practice, more than one of these predisposing condition frequently coexists. For instance, breech presentation can cause dystocia; thus the two are not mutually exclusive. However, multiple diagnosis ICD-9 codes can be converted into workable mutually exclusive categories for c-section. Anderson and Lomas [12] introduced a hierarchy of five categories. The order of these categories, from highest to lowest procedure is, previous c-section, followed by breech presentation, dystocia, fetal distress, and all other indications or conditions. To illustrate, if two indications, breech presentation and fetal distress were diagnosed for a c-section delivery, the analysis for this report would designate breech as the indication because it ranks higher in that hierarchical system. Clinical studies have found that the hierarchical systems proposed by Anderson and Lomas closely approximates clinical indications recorded by physicians [17]. The indications for c-section delivery in this report were defined based on ICD-9 codes using Anderson and Lomas’ hierarchical system of mutually exclusive categories.

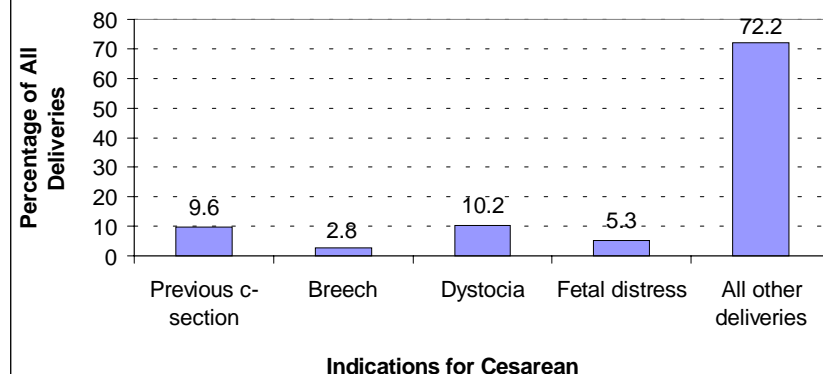
Previous c-sections

One in three c-sections are repeat c-sections (Table 5). A prior c-section may increase the likelihood of c-section for two reasons—(a) fear of uterine rupture, and (b) fear of recurrence of the complications that resulted in the earlier cesarean. The doctor may fear that the uterus will tear along the earlier scar during the trial of labor for vaginal delivery. The risk of rupture is high (about 12%) if a prior c-section involved classical uterine incision. However, there is ample evidence for the safety of trial of labor after c-section operation with low horizontal incision, the most common incision performed today [35].

- During 1997 in Utah, 9.7 percent of all women delivering in Utah hospitals had a previous c-section Table 5.
- For every 100 deliveries by previous c-section, 63 were delivered by c-section.
- Thirty seven percent of all c-sections in Utah had an indication of previous c-section (Figure 4).
- Six percent of all Utah deliveries were c-section with an indication of previous c-section (Figure 3).
- Although the percentage of deliveries in women delivering who had a previous c-section increased from 9.2 percent of deliveries in 1992 to 9.7 percent in 1997, the percentage of those with previous c-section who delivered by repeat c-section declined from 67.0 percent to 61.4 percent during this time period (Figure 2).

Research has shown that among women with one previous c-section and one previous vaginal delivery, those whose most recent delivery was vaginal had a lower rate of c-section delivery and shorter duration of labor than did those whose most recent delivery was c-section [18]. However, prior c-section delivery does not necessitate a c-section delivery unless there are serious medical risks. Between 60 to 92 percent of women after a previous c-section can be delivered vaginally given a trial of labor [31, 32, 33].

Figure 1: Percentage Distribution of All Hospital Deliveries by Presence of an Indication for C-Section: Utah, 1992-97



Breech presentation

Breech (bottom or feet first) and other abnormal presentations of a fetus increase the difficulty and risks of vaginal delivery. Experts believe that not all breech presentations should result in c-section, however. Some mothers should still be able to deliver vaginally if the doctor is successful in turning the baby with his or her hands with a procedure called external version [19].

Figure 2: Percentage of Patients With Each Indication Who Had A C-Section: Utah, 1992 and 1997

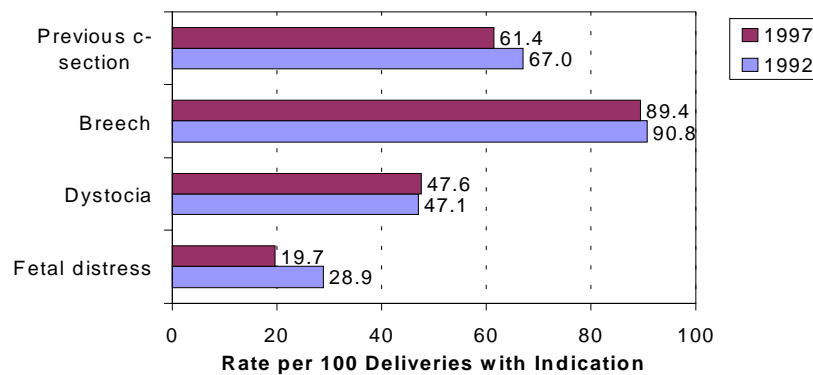
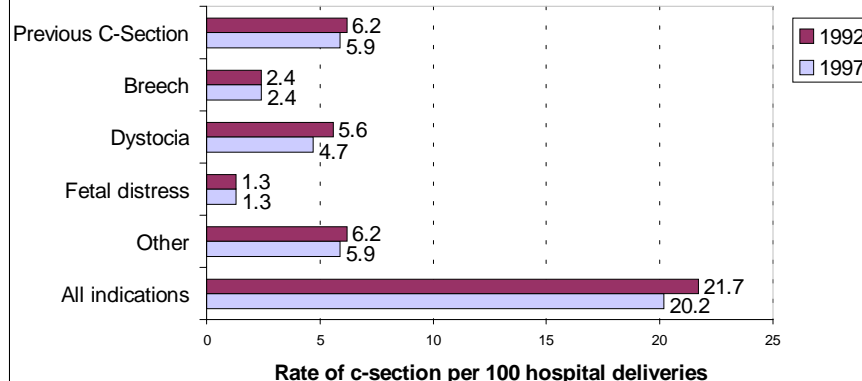


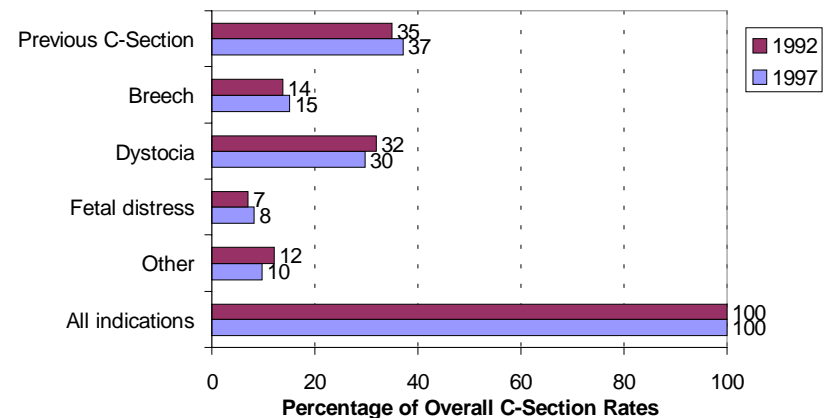
Figure 3: Rates of C-Section Deliveries per 100 Hospital Deliveries by the Specific Indication for C-Section: Utah, 1992 and 1997



- In Utah in 1992-97, breech presentation was recorded for only a small proportion (2.8%) of all hospital deliveries.
- Deliveries with breech presentation had the highest c-section rate among all conditions. On average, 90 c-section deliveries occurred for every 100 deliveries with breech presentation.
- For every 100 c-sections in Utah, 15 had an indication of breech presentation.
- For every 100 hospital deliveries, there were 2.5 c-sections with an indication of breech presentation.
- The frequency of breech presentation remained stable at 2.7 percent of all hospital deliveries between 1992 and 1997.

A study of singleton breech infants and their mothers in Vienna, Austria showed that parity was one of the major factors in determining whether an infant benefitted from an elective c-section as opposed to planned vaginal birth. While multiparas did not benefit from c-section delivery, primiparas did. A planned vaginal birth in primiparas* resulted in newborns with lower Apgar scores, a lower umbilical artery pH values and poorer fetal outcomes [20]. Among singletons with breech presentation, the neonatal mortality was significantly lower if the delivery was c-section than if it was vaginal [21].

Figure 4: Percentage Contribution of Each Indication to Overall C-Section Rates: Utah, 1992 and 1997



*Primipara - defined as a woman who has given birth for the first time.

Dystocia

Dystocia, the Greek antonym for *eutocia* (normal labor), means difficult labor, including labor that fails to progress, prolonged labor, or difficult childbirth. Dysfunctional labors due to cephalopelvic disproportion (CPD) occur when the baby is too large to pass safely through the mother's pelvis. It is difficult to determine if a mother will have CPD until she is actually in labor. Since CPD can occur because a baby is too large or the pelvis is too small or both, having had a CPD in an earlier delivery does not mean it will recur in a future delivery.

- Dystocia is the most prevalent of the conditions that lead to c-section delivery in Utah; this condition is diagnosed in 10.2 percent of all hospital deliveries.
- Roughly half of the deliveries with dystocia are by c-section.
- Thirty percent of c-sections in Utah had an indication of dystocia.
- For every 100 hospital deliveries in Utah during 1992-97, there were 5 c-sections with an indication of dystocia.
- Although the frequency at which dystocia was recorded increased slightly from 9.2 per 100 deliveries in 1992 to 9.7 in 1997, the percentage of those with dystocia who were delivered by c-section remained unchanged.

A considerable proportion of dystocia-related c-section deliveries can be prevented through active labor management [22]. A meta-analysis of 18 published reports showed that the rate of c-section delivery for dystocia in nulliparas* can be reduced by 34 percent through active management of labor [23]. Epidural anesthesia has been thought to increase the risk of c-section delivery for dystocia, particularly in first labor. The risk of c-section delivery for dystocia is influenced by many other factors such as parity, cervical dilation at the time of epidural catheter placement, technique of epidural anesthesia, and obstetrical management of labor after placement of epidural anesthesia [24]. A recent study at St. Louis Regional Medical Center established that dystocia was more common among women who chose an epidural anesthesia. However, epidural anesthesia availability did not affect c-section delivery rates [25].

Fetal distress (that fails to respond to treatment)

Fetal distress occurs when babies are not getting enough oxygen and therefore cannot tolerate labor. The term fetal distress is very broad as some degree of fetal distress is almost universal during parturition. Since the 1970s, electronic fetal heart rate monitoring has become a standard to monitor fetal oxygenation and acid-base status as indicators of fetal distress that is "reassuring" or "non-reassuring."

- During 1992-97 in Utah, fetal distress was recorded in 5.3 percent of all hospital deliveries.
- Twenty-five percent of deliveries for which fetal distress was recorded were by c-section.
- Of all c-sections in Utah, 7.6 percent had an indication of fetal distress.
- During 1992-97 in Utah, 1.3 percent of all hospital deliveries were c-section with an indication of fetal distress.
- Between 1992-97 in Utah, the overall frequency at which fetal distress was recorded increased from 4.3 percent of hospital deliveries to 6.6 percent. The percentage of deliveries with fetal distress that resulted in c-section has declined from 28.9 to 19.7, suggesting that this condition can often be successfully treated in utero, allowing labor to continue on to a vaginal delivery.

In the case of non-reassuring fetal monitoring distress that fails to respond to treatment, babies must be delivered as soon as possible. Usually c-section is performed with the intent of avoiding asphyxia and subsequent neurological abnormalities [35]. The diagnosis of fetal distress based on fetal heart rate patterns is often oversimplified. Research has shown that the diagnosis of fetal distress varies depending on institutional and other non-clinical factors such as physician (can be certified nurse midwife) or patient fatigue [14]. Fetal distress has been recommended as an area to focus on to lower c-section rates [15].

*Multipara - defined as a woman who has given birth at least two times to an infant, liveborn or not, weighing 500g or more, or having an estimated length of gestation of at least 20 weeks.

Other medical reasons

The category, medical reasons, includes conditions other than previous c-section, breech, dystocia, or fetal distress. This report designated the indication as “other medical reasons” if none of the diagnosis codes (ICD-9 code) for previous c-section delivery, breech presentation, dystocia, or fetal distress were recorded.

- During 1992-97 in Utah, 72.2 percent of all hospital deliveries had none of the first four indications for c-section.
- The risk of a c-section delivery was low (2.6%) when none of the four indications was present.
- During 1992-97 in Utah, only 1.9 percent of all hospital deliveries had a c-section for “other medical reasons”.
- Of all c-sections in Utah, 11.2 percent were categorized as “other” condition; that is, had no indication of previous c-section, breech presentation, dystocia, or fetal distress.

III. Trends and patterns of c-section deliveries in Utah

Overall C-Section Rate:

Healthy People 2000 and 2010 targets

- The rate of c-section delivery in the U.S. has been decreasing steadily. Nationally, it has not quite reached the Healthy People 2000 (HP-2000) target of 15 per 100 deliveries, though a number of states have reached that goal.
- The Healthy People 2000 goal of reducing the c-section rate to 15 percent has been criticized as being an authoritarian approach to health care delivery. A recent article published in the *New England Journal of Medicine* concluded that reducing the c-section rate may lead to higher costs and more complications such as uterine rupture and neonatal trauma. The authors suggested that economic forces instead of concern for maternal and infant health are pushing the c-section rates down toward the Healthy People 2000 goal [4].
- In the wake of recent findings that hint at the risks involved in lowering c-section delivery rates below a certain level [4], the Healthy People 2010 target is the same as that for HP-2000. It suggests that reduction of the c-section rate below 15 per 100 deliveries may have undesirable consequences. The Healthy People 2010 (draft) objective is stated as “[r]educe the c-section delivery rate to no more than 15 per hundred deliveries.”

The Risks of Lowering C-section Deliveries (to HP 2000 target)

A recent article published in the *New England Journal of Medicine* (4) suggested that “...the Healthy People 2000 goal of reducing the c-section delivery rate to 15 percent may have detrimental effects on maternal and infant health.” The authors argued that economic forces are driving the c-section delivery rates to a level that may not be safe for mothers and their

babies. They recommended reevaluating the nation’s goal to reduce the rate of c-sections from 21% in 1995 to 15% by 2000.

The authors acknowledged that the number of c-sections performed may be too high. They argued that lowering the rate to 15% may cause problems for both mother and baby. Programs designed to reduce c-section rates use two basic strategies—increasing VBAC, and increasing operative vaginal deliveries. The authors suggested that, “as the number of vaginal deliveries after c-section deliveries and the number of vacuum-assisted deliveries increase, so will the number of reported complications. These complications must be weighed against the risks of c-section delivery.”

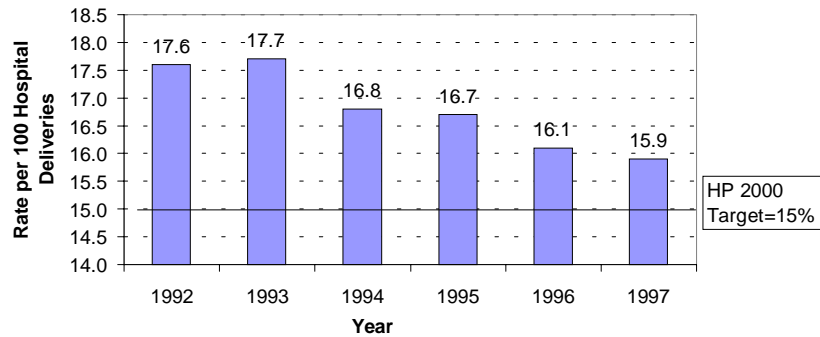
The authors recommended that women’s preferences should be considered rather than adopting an “authoritarian” approach. They strongly recommended that “trial of labor not be mandated for women with previous c-section deliveries.” They advocated that attempts to reduce c-section deliveries should concentrate on reducing the number of primary c-section deliveries (c-sections performed for the first time) rather than reducing all c-section deliveries.

Benjamin P. Sacks, Cindy Kobelin, Mary Castro, and Fredric Frigoletto. The Risks of Lowering the Cesarean-Delivery Cesarean Rate. The New England Journal of Medicine. Vol. 340 No.1 Pp. 54-57.

Current National Rates in Comparison with Utah Rates

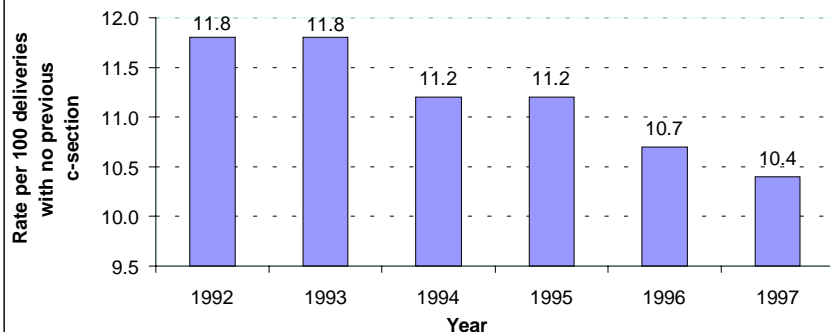
- From 1965 to 1995, the rates of c-section deliveries in the U.S. increased from 4.5% to 20.8% with a peak of 24.4% in 1988 [2, 3, 28, 29].
- In Utah, there were 37,384 c-section births during 1992-97, accounting for 16.8% of all hospital births.
- The overall c-section delivery rate has declined from 17.7% in 1993 to 15.9% in 1997 (Figure 5).

**Figure 5: Rate of C-Section Deliveries:
Utah, 1992-97**



- Utah's c-section rate is considerably lower than the national rate. It is roughly one percentage point higher than the Healthy People 2000 objective of 15.0%. The long term trend for c-section deliveries in Utah is unclear due to the lack of data on mode of delivery prior to 1989 in the Birth Certificate Data, and prior to 1992 in the Hospital Discharge data.
- Declines in both primary c-section and repeat c-section rates contributed to the decline in overall c-section rates (Figure 7).

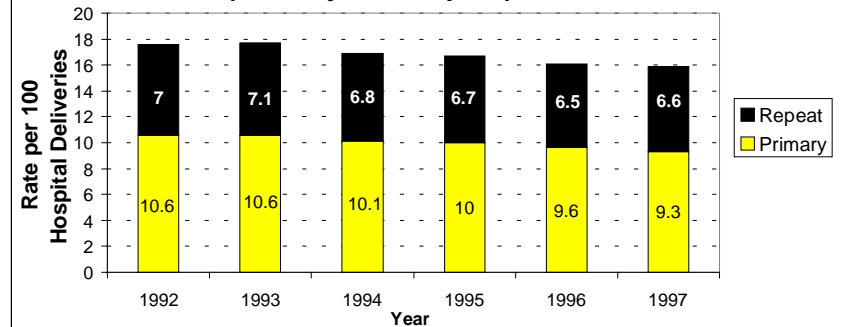
**Figure 6: Rate of Primary C-Section Deliveries:
Utah, 1992-97**



Rates of Primary C-Section Deliveries

- In 1995, the rate of primary c-section deliveries per 100 hospital deliveries with no previous c-section was 14.7 nationally and 11.2 in Utah.
- The rate of primary c-section deliveries in Utah is already lower than the Healthy People 2010 target of 12 percent.
- In Utah, the average primary c-section delivery rate during 1992-97 was 11.2 per 100 hospital deliveries with no previous c-section. Primary c-section deliveries accounted for 60 percent of all c-section deliveries in Utah.
- The primary c-section rate has declined from 11.8 in 1992 to 10.4 in 1997 (Figure 6).

**Figure 7: Breakdown of Utah's Overall C-Section Rate into Contributing Components
(Primary and Repeat): 1992-97**

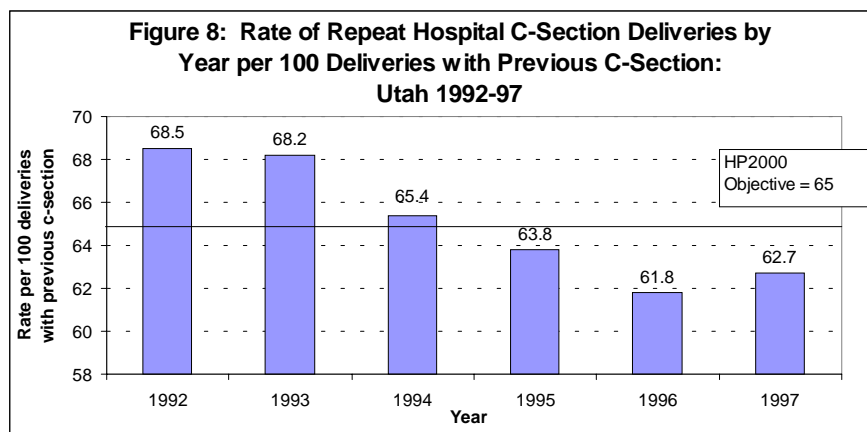


Does c-section increase the chances of survival for very low birth weight infants?

A remarkable increase in c-section rates for very low birth weight infants has been noted. Empirical evidence, however, challenges the effectiveness of c-section in improving the overall survival of infants with very low birth weight, independent of maternal or fetal conditions [27].

Repeat C-Section Rates

- In 1995, the rates for repeat c-section deliveries per 100 deliveries with at least one previous c-section were 72.5 nationally and 63.8 in Utah.
- The rate of repeat c-section in Utah is already lower than the Healthy People 2010 target of 65 percent.
- In Utah, the average repeat c-section rate during 1992-97 was 64.9 per 100 hospital deliveries with at least one previous c-section. Repeat c-section deliveries accounted for 40 percent of all c-section deliveries in Utah.
- The repeat c-section rate in Utah has declined from 68.5 in 1992 to 62.7 in 1997 in (Figure 8). This represented a decrease of 5.8 percentage points in rate or a ratio change of 8.4 percent, slightly less than the ratio decrease in overall c-section delivery rate (10.2 percent).



“Craig dictum” (once a c-section always a c-section) that dominated obstetrical practice for nearly 70 years was revised by the American College of Obstetricians and Gynecologists in 1984 to encourage a trial of labor for women who had a low transverse uterine scar [13]. During 1992-97 in Utah, 35% of pregnant women delivering in a hospital who had a previous c-section birth had a VBAC (vaginal birth after c-section) after trial of labor.

Why have c-section rates increased

The reasons for a five-fold increase in two decades since 1965 are not fully understood but some include the following:

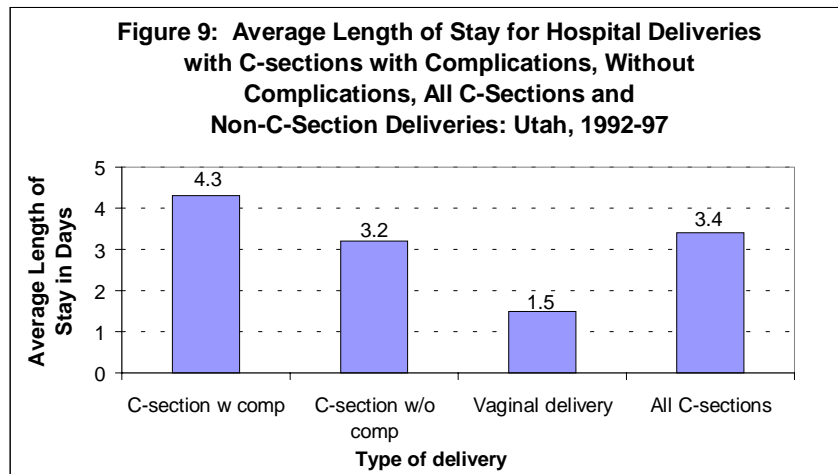
- Due to concern for **malpractice litigation**, it is believed that some physicians are performing c-sections much earlier in labor at the first hint of trouble [7].
- Increased use of **electronic fetal monitoring** resulting in high false positive rates for fetal distress and **improved diagnosis** of maternal and fetal complications are thought to be associated with increased c-section rates [14].
- A patient may prefer an unnecessary c-section delivery rather than face a possible risk to the baby. Women with higher **socio-economic status** tend to have a higher c-section delivery rate than those with lower socioeconomic status [30].
- Reluctance of physicians to resolve **breech presentations** is another important contributor of c-sections. In Utah, 90% of all breech presentations in 1992-97 were delivered by c-section.
- Almost half of the pregnant women are nulliparas. Since c-section delivery is more common in nulliparas, an increase in the rate is partially explainable [35].

- A greater number of women in child-bearing years are having children now, and the **changing age composition** of women of child-bearing age has contributed to higher c-section rates [16].
- Physicians have been accused of performing c-section deliveries to collect a **higher reimbursement** compared to vaginal births and to have more regular hours. Hueston and colleagues (1996) observed that c-section deliveries for fetal distress peaked during night time hours and associated this phenomenon with physician or patient fatigue [14]. Lower VBAC rates in for-profit hospitals were found when compared with university hospitals [37].

IV. Length of stay and average charges for c-section and vaginal deliveries in Utah

Length of stay(LOS)

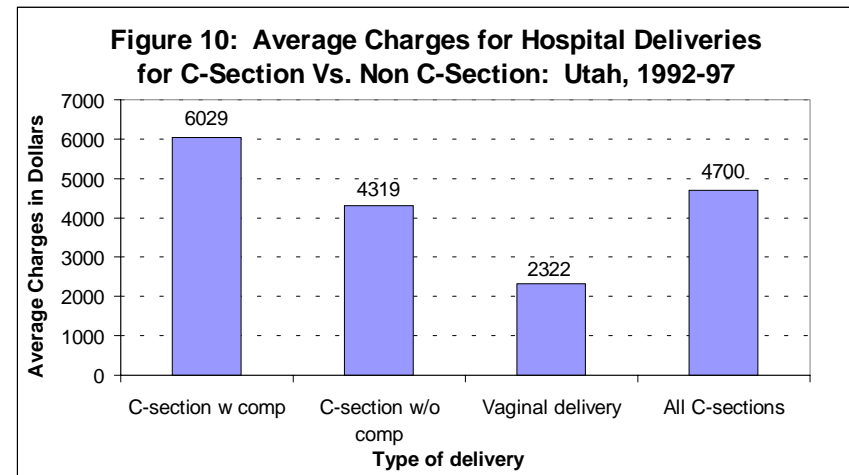
- ② During 1992-1997 the average length of stay (LOS) for c-section deliveries with complications was 4.3 days, almost three days longer than the average LOS for vaginal deliveries. The LOS for c-section deliveries with no complications was twice as long as that for vaginal deliveries (Figure 9).



- ② Between 1992-97, the average LOS decreased by half a day for a c-section with complications, by 0.3 days for a c-section with no complications, and by 0.2 days for vaginal deliveries (Table 8).

Average hospital charges for c-section and vaginal deliveries

- ② C-section deliveries have higher hospital charges than vaginal deliveries (Figure 10). For instance in 1997 (see Table 8), there was a difference of \$4,072 between average charges for a c-section delivery with complications (\$6,703) and the average charges for a vaginal delivery (\$2,631). There was a \$2,354 difference between average charges for a c-section delivery with no complications (\$4,985) and the average charges for a vaginal delivery (\$2,631).



- ② Unlike length of stay, the average hospital charges increased each year. Average charges for c-section deliveries with complications increased by \$1,522 between 1992 and 1997, reflecting a 29% increase. Increase in average charges for c-section deliveries with no complications and vaginal deliveries was 30% and 30.5%, respectively.

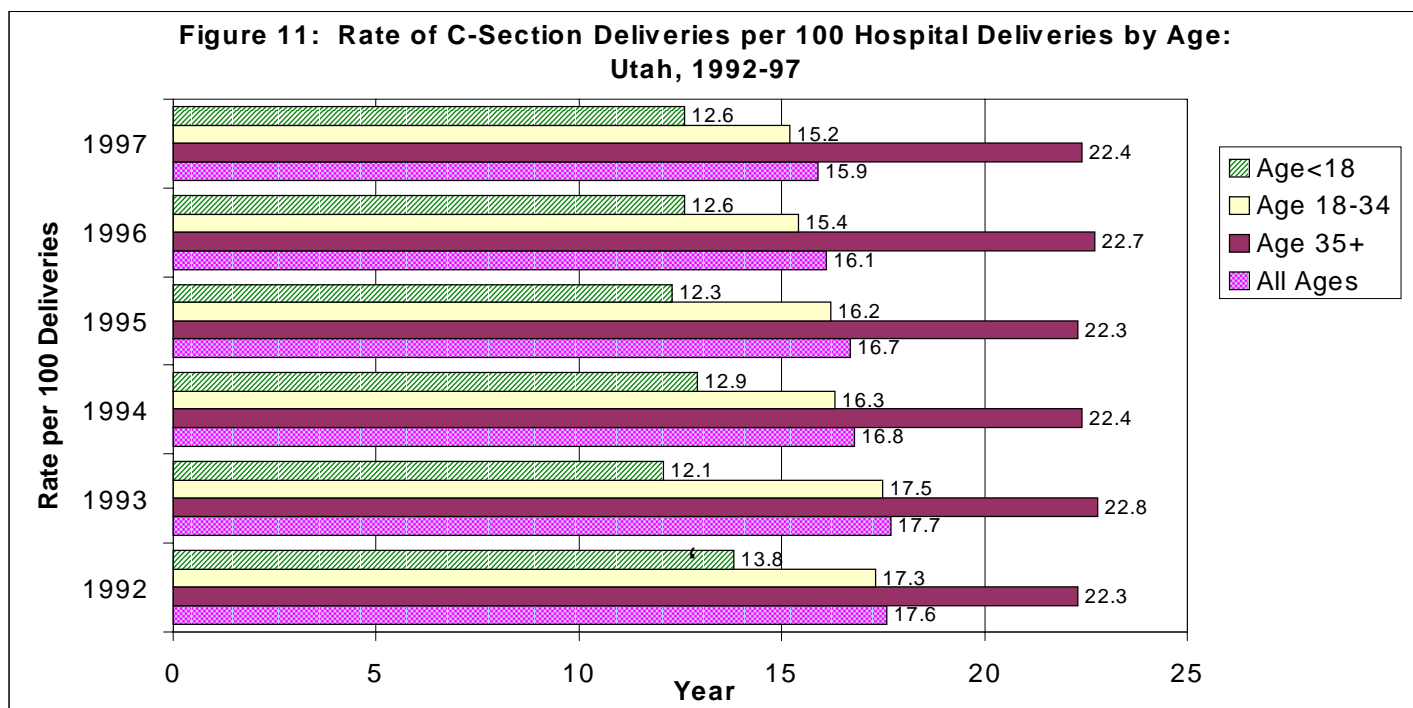
V. Other risk factors and correlates

Many risk factors have been documented to be associated with c-section deliveries. For instance, the risk increases for women with high pregnancy weight and body mass index, and in women carrying a male fetus [11, 34], as male fetuses on average are 10-12 ounces heavier than females. Rates of c-section deliveries have been found to be lower for tall mothers compared with women with short stature [26, 5]. There are other factors such as lower tolerance for taking risks, and couples' expectation of a healthier baby [4]. This section of the report focuses only on those factors for which information was available from the Utah Hospital Discharge Database. They are maternal age, primary payer status, geographic location of residence in Utah (Utah small areas), and individual hospitals.

Maternal age

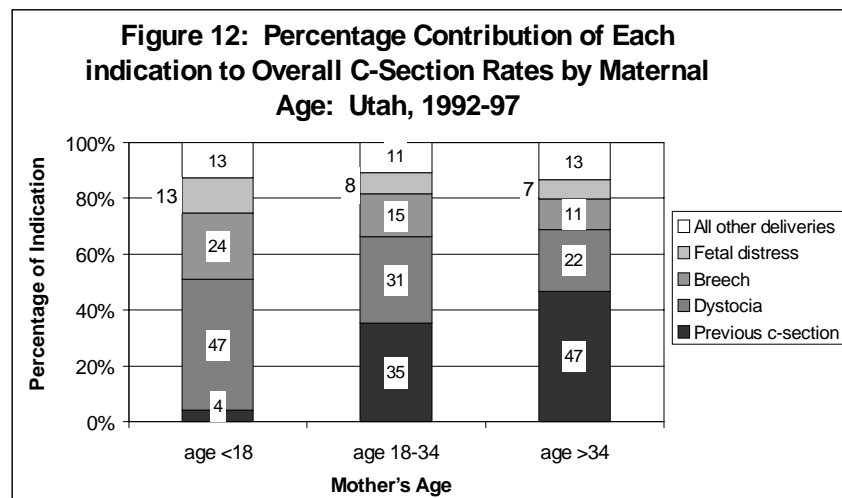
Variation in overall, primary, and repeat c-section

- Maternal age is a strong determinant of the likelihood of c-section delivery. There was a steady increase in the overall rate of c-section deliveries as age increased. Rates were lowest (12.6%) for women younger than 18, and highest (22.4%) among women older than 34, while in-between (15.2%) for those in age group 18-34 in 1997 (Figure 11).
- The rate of primary c-section for women 35 and older was 13.3 percent of all deliveries without a previous c-section compared to the rate of 10.9% for women in the age group 18-34 and 12.2% for women younger than 18 years (Table 3).
- The repeat c-section rate was highest for women younger than 18 (72.7% of deliveries with at least one previous c-section), followed by that for women 35 and older (67.6%), and those age 18-34 (64.4%) (Table 4).



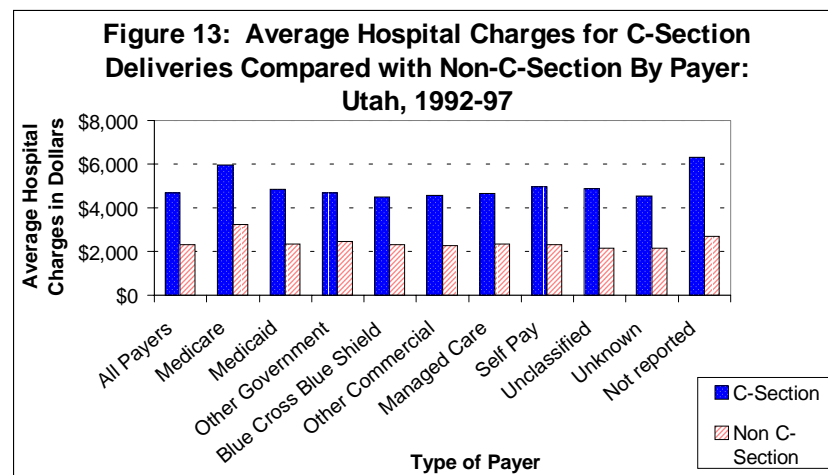
Variation in clinical indications (Figure 12)

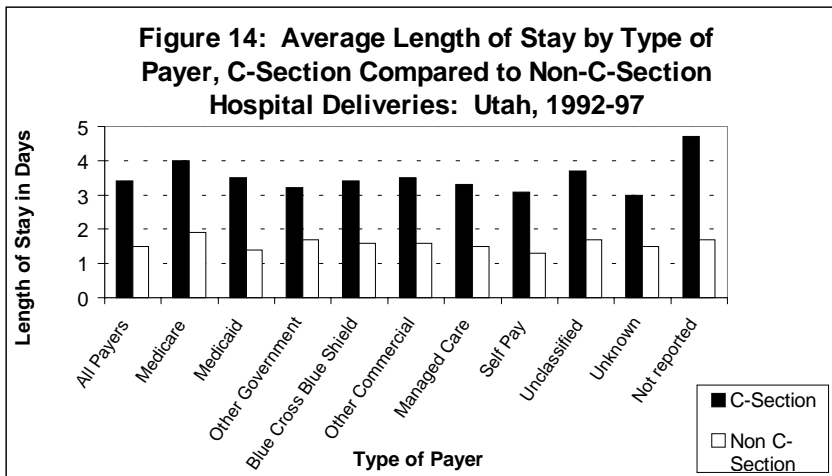
- Of the three age groups compared in this report, the incidence of previous c-section is highest in ages over 34 and lowest in ages younger than 18.
- Little variation in rates of breech presentation occurred by age groups. The c-section rate for deliveries with breech presentation also varies little across age categories.
- There was a steady increase in rate of dystocia with increase in age. Similar positive co-variation by age was noticed in rate of c-section deliveries with indication of dystocia for age groups <18, 18-34, and >34 (46.9%, 49.2%, and 56.0%).
- The incidence of fetal distress was higher (7 per 100 deliveries) in women younger than 18 when compared with that for women age 18 to 34 (5.2%) or 35 and older (5.3%).



Principal payer

- C-section delivery rates vary by type of principal payer. C-section rates for commercial insurance payers were slightly lower than the rates for public payers, composed mainly of Medicaid but including Medicare and other government payers. The highest rate was 33.5 per 100 deliveries for Medicare (N=206) whereas the lowest rate of c-section was 11.6 percent (N=9,462) for the self pay category (Table 9).
- The average length of stay for c-section delivery was lowest for the self pay category (3.1 days) (Figure 14), but average charges were lowest for a commercial insurance—Blue Cross Blue Shield (\$4,490) (Figure 13).

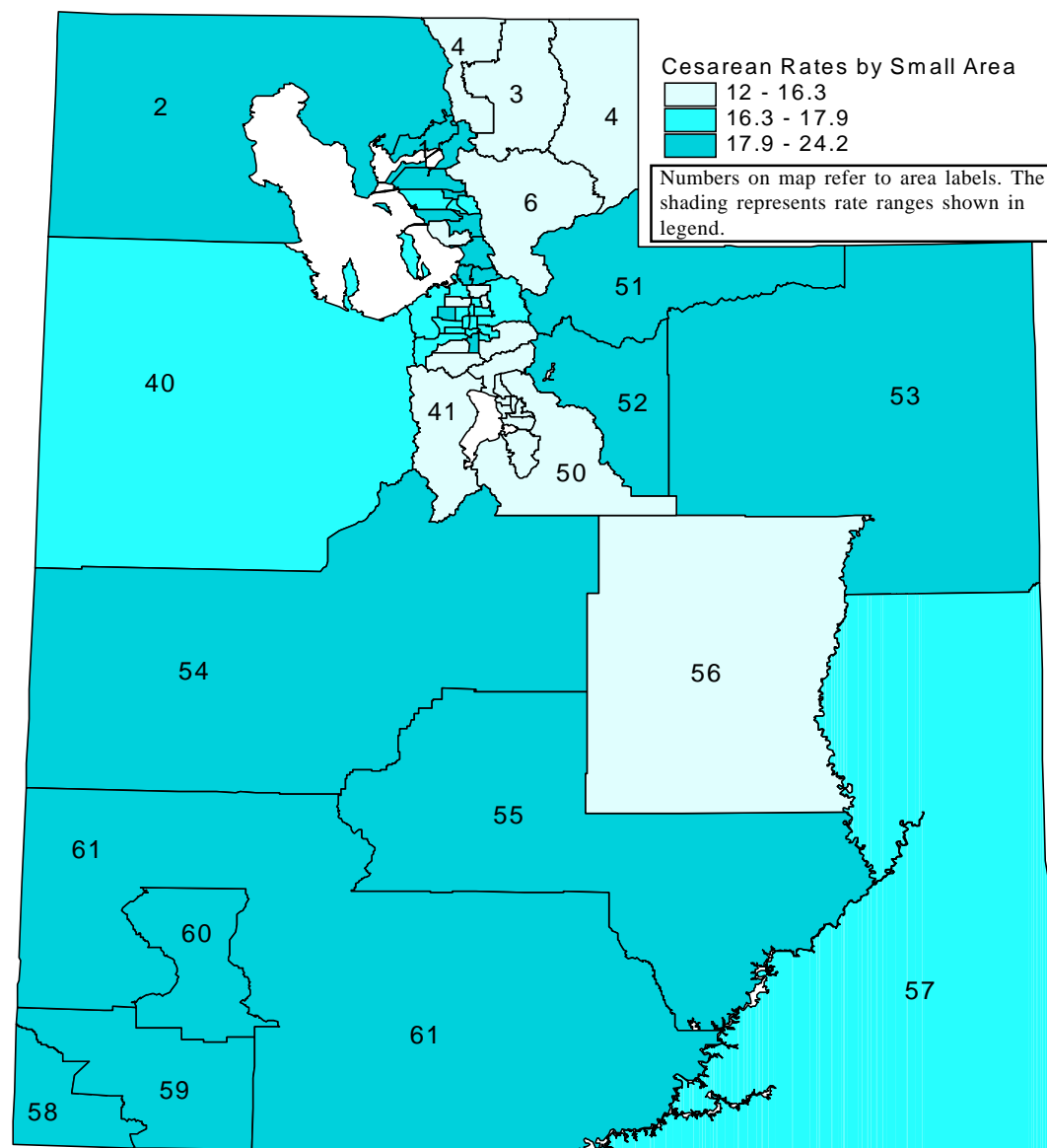




Utah Small Areas (Figures 15, 16)

- C-section delivery rates were calculated according to mother's residence in 61 small areas based on mothers' zip code of residence and are presented in area maps on the next two pages (see tables 19, 20, 21). Data indicate a clear variation in rates across small areas. Lowest rates were observed for Logan (12.0%), followed by Other Cache/Rich County (12.4%) and Provo/BYU and Provo South (13.0%).
- Rates were highest for Sevier/Piute/Wayne counties (24.0%), followed by Southwest District excluding Cedar City (23.6%), Tri-County (23.0%), and Juab/Millard/Sanpete Counties (20.7%). Figures 15 (State) and 16 (Wasatch Front) show patterns of variation across small areas.
- C-section rates need to be examined at the small area level to understand variation of rates throughout the State. Further study at that level is needed to determine why these rates differ from overall state and national rates.

Figure 15: Rates of C-section Deliveries per 100 Hospital Deliveries, State View Utah Small Areas, 1992-1997



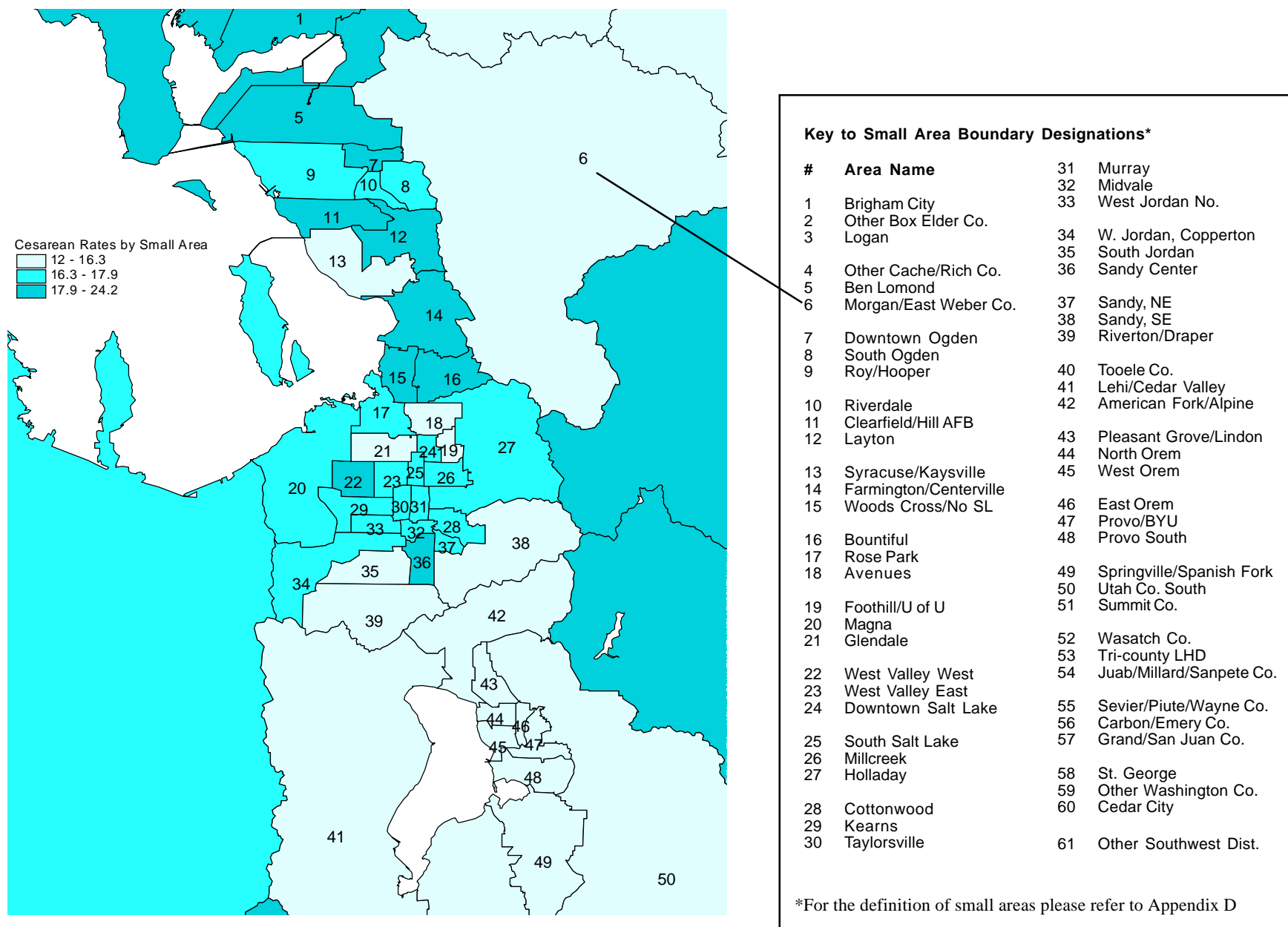
Key to Small Area Boundary Designations*

#	Area Name	
1	Brigham City	31 Murray
2	Other Box Elder Co.	32 Midvale
3	Logan	33 West Jordan No.
4	Other Cache/Rich Co.	34 W. Jordan, Copperton
5	Ben Lomond	35 South Jordan
6	Morgan/East Weber Co.	36 Sandy Center
7	Downtown Ogden	37 Sandy, NE
8	South Ogden	38 Sandy, SE
9	Roy/Hooper	39 Riverton/Draper
10	Riverdale	40 Tooele Co.
11	Clearfield/Hill AFB	41 Lehi/Cedar Valley
12	Layton	42 American Fork/Alpine
13	Syracuse/Kaysville	43 Pleasant Grove/Lindon
14	Farmington/Centerville	44 North Orem
15	Woods Cross/No SL	45 West Orem
16	Bountiful	46 East Orem
17	Rose Park	47 Provo/BYU
18	Avenues	48 Provo South
19	Foothill/U of U	49 Springville/Spanish Fork
20	Magna	50 Utah Co. South
21	Glendale	51 Summit Co.
22	West Valley West	52 Wasatch Co.
23	West Valley East	53 Tri-county LHD
24	Downtown Salt Lake	54 Juab/Millard/Sanpete Co.
25	South Salt Lake	55 Sevier/Piute/Wayne Co.
26	Millcreek	56 Carbon/Emery Co.
27	Holladay	57 Grand/San Juan Co.
28	Cottonwood	58 St. George
29	Kearns	59 Other Washington Co.
30	Taylorsville	60 Cedar City
		61 Other Southwest Dist.

*For the definition of small areas please refer to Appendix D

Source: Utah Hospital Inpatient Discharge Database, 1992-97, Utah Department of Health.
 Note: Small area designation for each discharge was based on patients' zip code of residence.

Figure 16: Rates of C-Section Deliveries per 100 Hospital Deliveries, Utah Small Areas, Wasatch Front View 1992-97



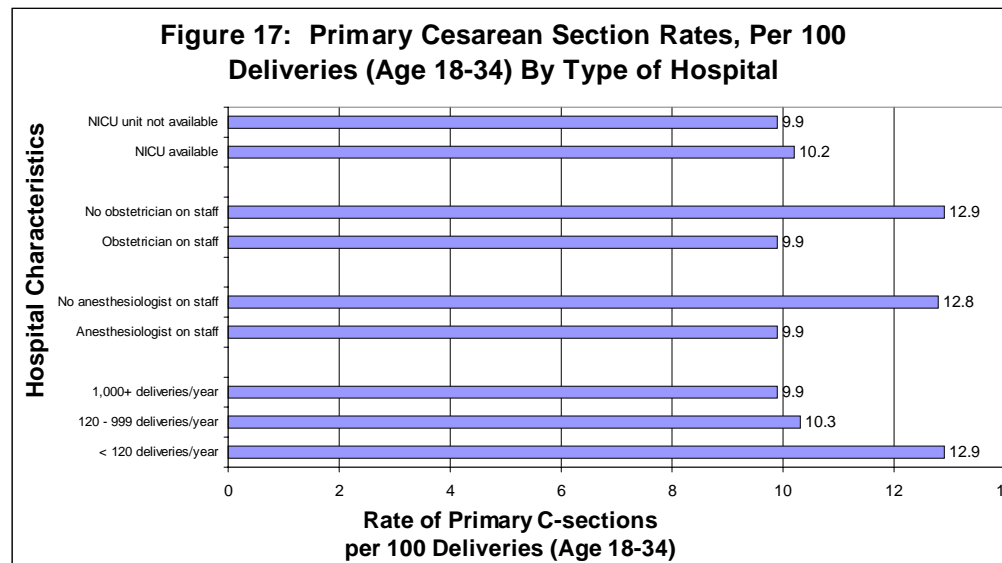
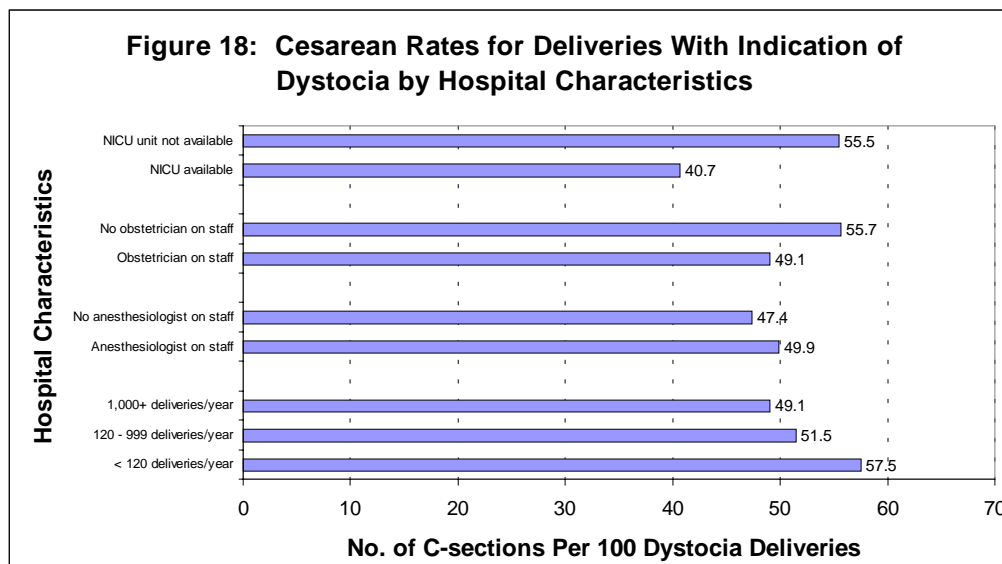
Source: Utah Hospital Inpatient Discharge Database, 1992-97, Utah Department of Health.
 Note: Small area designation for each discharge was based on patients' zip code of residence.

Hospital Variation

- Hospitals show considerable variation in volume as well as in rates of c-section. The lowest rate during 1992-1997 was 11.7 for Logan Regional Hospital (1,280 c-sections) and Jordan Valley Hospital (652 c-sections), whereas it was 28.2 for Gunnison Valley Hospital (244 c-sections). Among hospitals with over 1,000 deliveries, the highest rate was 22.0 for Lakeview Hospital (1030 c-section deliveries) (Table 12).
- The statewide average overall c-section rate of 16.8 during 1992-97 was 11.4 percent points below the highest hospital rate, and 5.1 percentage points above the lowest hospital rate.

The greatest variation was found in primary c-section rates by hospital characteristics (see Figure 17).

- Hospitals in rural counties, on the average, had higher primary c-section rates (12.1 per 100 deliveries) than hospitals in urban counties (9.8 per 100 deliveries).
- The primary c-section delivery rate was higher for hospitals with no obstetrician on staff (12.9 per 100 hospital deliveries) than hospitals that had at least one obstetrician on staff (9.9 percent).
- The primary c-section rate was higher for hospitals with no anesthesiologist on staff (12.8 per 100 hospital deliveries) than hospitals that had at least one anesthesiologist on staff (9.9 percent).
- The primary c-section rate was higher for hospitals with an annual delivery volume of less than 120 deliveries (12.9 per 100 hospital deliveries) than hospitals with an annual delivery volume of 120-999 or more deliveries (10.3 percent) or those with 1,000+ deliveries (9.9 percent).



VI. Policy Recommendations

Cesarean section (c-section) delivery is a major surgical operation and should only be chosen as a method of delivery if the health of the mother or infant is at risk. Besides medical reasons, other issues such as physician practice, the convenience of the physician or patient, or legal issues may contribute to whether a c-section is performed. C-sections should not be performed for the convenience of the doctor or parents or for any other non-medical reasons. Hospitals, physicians and patients should be aware of the issues that may affect the overall utilization of this procedure.

The Healthy People 2000 goal may not be a “safe” or attainable rate of c-section for women who have already had a c-section. As the rate of c-section goes down, complications from vaginal births after C-section (VBAC) and vacuum-assisted deliveries may rise. A trial of labor is not always appropriate for women with a previous c-section as the focus should be on avoiding primary c-sections, rather than on VBAC, to lower the overall c-section rate.

A recent ACOG (American College of Obstetricians and Gynecologists) practice bulletin provided the following recommendations regarding VBAC [41].

The following recommendations are based on good and consistent scientific evidence (Level A):

- Most women with one previous cesarean delivery with a low transverse incision are candidates for VBAC and should be counseled about VBAC and offered a trial of labor.
- Epidural anesthesia may be used for VBAC.
- A previous uterine incision extending into the fundus is a contraindication for VBAC.

The following recommendations are based on limited or inconsistent scientific evidence. (Level B):

- ◆ Women with two previous low-transverse cesarean deliveries and no contraindications who wish to attempt VBAC may be allowed the trial of labor. They should be advised that the risk of uterine rupture increases as the number of cesarean deliveries increases.
- Use of oxytocin or prostaglandin gel for VBAC requires close monitoring.
- Women with vertical incisions within the lower uterine segment that does not extend into the fundus are candidates for VBAC.

The following recommendations are based primarily on consensus and expert opinion (Level C):

- Because uterine rupture may be catastrophic, VBAC should be attempted in institutions equipped to respond to emergencies with physicians readily available to provide emergency care.
- After thorough counseling that weighs the individual benefits and risks of VBAC, the ultimate decision to attempt this procedure or undergo a repeat cesarean delivery should be made by the patient and her physician.

Transmission of HIV/AIDS has been a public health concern since the 1980's when the virus was identified. There is evidence that delivery of a newborn by c-section may decrease transmission by reducing exposure of the newborn to maternal blood or bodily fluid [38, 39, 40]. Other studies are needed to conclusively demonstrate that c-sections reduce transmission between mother and child before a c-section delivery becomes a legitimate option for HIV prevention.

By making six years of hospital discharge data available to the public, this report provides trend information to promote accountability and improvement in maternal and child health in Utah. C-sections are needed procedures and appropriate use and variation can be assessed by predisposing medical indication, hospital (individual and type) and other risk factors and correlates. By making information about c-sections in Utah available, this report is designed to be used in quality improvement at the hospital level and public health improvement at the community and State levels.

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APPENDIX A: Methods and Materials

Source of Data

Data used in this report are inpatient records from the Utah Hospital Discharge Database. Utah licensed hospitals are mandated by Administrative Rule R428-10 to report information on inpatient discharges; collection of data elements began January 1, 1992. In 1997, fifty-three Utah hospitals submitted information including nine psychiatric facilities, six specialty hospitals, and the Veterans Administration Medical Center.

All deliveries by Utah residents in Utah's general acute care hospitals from 1992 to 1997 were included in the analyses at the state level. All deliveries which occurred in a specific hospital to Utah residents from 1992 to 1997 were included in the analyses at the hospital level. Milford Memorial Hospital was excluded from the hospital comparison due to its small volume of deliveries. Monument Valley Hospital was excluded from hospital comparison since the hospital closed in 1995. Only hospitals that operated in 1997 are included. Tables comparing hospitals include 38 hospitals that had at least 30 deliveries during 1992-97.

Patient records are categorized into one of nearly 500 diagnostic related groups (DRGs). DRGs 370-375 are cases in which the principal diagnosis is coded as delivery.

Small Area Analysis:

This report examined community level variation in rates of cesarean deliveries by presenting data on 61 small areas in Utah. Discharges were assigned to the small area of the patient's residence, not the small area in which the hospital was located. The Wasatch Front contained 44 of the small areas with the other 17 areas located in rural counties. The average 1997 population size for these small areas was 33,500 persons (range from 15,000 to 62,500 persons). Sometimes ZIP codes or counties were used individually, at other times contiguous areas were combined. Population size, political boundaries of cities and towns, and economic similarity were the chief criteria used to combine the areas. A complete list of area definitions (county combinations were used to create each area) is given on page 14 next to the map. A detailed description of the methodology used to designate small area boundaries may be found in Appendix C of this report [28].

Definitions of Terms

Delivery

A discharge with a code of Diagnosis Related Group (DRG) from 370 to 375.

C-section Delivery

A discharge with a DRG of 370 or 371 or any procedure code of 740.00-744.99, or 749.00-749.99.

C-section Delivery with Complications

A discharge with a DRG of 370.

C-section Delivery Without Complication

A discharge with a DRG of 371.

Primary C-section Section

A c-section delivery without a diagnosis ICD-9 code of 654.2.

Indication of Previous C-section Section

A discharge with a diagnosis ICD-9 code of 654.2.

Indications for C-section Section

ICD-9 Codes (up to 9 diagnosis)

1. Previous c-section	654.2
2. Breech presentation	652.2
3. Dystocia	
Disproportion	653.0, 653.1, 653.2, 653.3, 653.4, 653.9
Obstructed labor	660.1, 660.6, 660.7, 660.8, 660.9
Abnormality of forces of labor	661.0, 661.1, 661.2, 661.9
Long labor	662.0, 662.1, 662.2
Malpresentation	660.0, 650.2, 652.5, 652.8, 652.9
4. Fetal distress	656.3
5. Other	Not included in the above

The indications are ordered in a mutually exclusive hierarchy. The coding categories are based on a hierarchy of five categories, each taking precedence over all succeeding groups recommended by Anderson and Lomas [12]. The order of these categories is, previous c-section, followed by breech presentation, dystocia, fetal distress, and all other indications. Clinical studies have found that hierarchical systems proposed by Anderson and Lomas closely approximate the clinical indications recorded by physicians [17].

Computation of Rates

Overall c-section rate:

$$\frac{\text{Number of c-section deliveries}}{\text{Total number of deliveries}} * 100$$

Primary c-section rate per 100 deliveries with no previous c-section

$$\frac{\text{Number of first-time c-section deliveries}}{\text{Total number of deliveries without ICD-9 code 654.2}} * 100$$

Primary c-section rate per 100 deliveries

$$\frac{\text{Number of first-time c-section deliveries}}{\text{Total number of deliveries}} * 100$$

Repeat c-section rate:

$$\frac{\text{Number of c-section deliveries with ICD-9 code 654.2}}{\text{Total number of c-section deliveries with ICD-9 code 654.2}} * 100$$

Percent of patients with each indication (or condition) who delivered by c-section section

Percent of patients with each indication who delivered by c-section section=

$$\frac{\text{Number of c-section deliveries with indication (e.g. dystocia)}}{\text{Total number of c-section deliveries with indication (e.g. dystocia)}} * 100$$

Indication-specific overall c-section rate:

Rate of c-section deliveries for a specific indication (e.g. dystocia) =

$$\frac{\text{Number of c-section deliveries with indication (e.g. dystocia)}}{\text{Total number of deliveries}} * 100$$

Percentage contribution of each indicator to overall c-section rate

Percentage contribution of each indicator to overall c-section rate =

$$\frac{\text{Number of c-section deliveries with indication (e.g. dystocia)}}{\text{Total number of c-section deliveries}} * 100$$

Percentage of all deliveries with a specific indication

Percentage of all deliveries having a specific indication=

$$\frac{\text{Number of deliveries with indication (e.g. dystocia)}}{\text{Total number of deliveries}} * 100$$

Appendix B: Reference Tables

**Table 1: Counts and Rates of Overall C-section (Per 100 Hospital Deliveries) by Age and Year
Inpatient Discharges from Utah Hospitals: 1992-1997**

YEAR	ALL AGES		AGES < 18		AGES 18-34		AGES > 34	
	Number*	Rate**	Number*	Rate**	Number*	Rate**	Number*	Rate**
1992	6,045	17.6	179	13.8	5,171	17.3	695	22.3
1993	6,172	17.7	163	12.1	5,293	17.5	709	22.8
1994	6,066	16.8	145	12.9	5,078	16.3	816	22.4
1995	6,290	16.7	143	12.3	5,291	16.2	843	22.3
1996	6,408	16.1	129	12.6	5,361	15.4	915	22.7
1997	6,403	15.9	125	12.6	5,332	15.2	944	22.4
1992-97	37,384	16.8	884	12.7	31,526	16.3	4,922	22.5

SOURCE: Utah Hospital Inpatient Discharge Database, 1992-97, Utah Department of Health.

*Total number of hospitalizations

**Rate per 100 hospital deliveries

**Table 2: Counts and Rates of Hospitalizations for Overall, Primary, and Repeat C-Section
Per 100 hospital deliveries, Inpatient Discharges from Utah Hospitals: 1992-1997**

YEAR	OVERALL		PRIMARY		REPEAT	
	Number*	Rate**	Number*	Rate**	Number*	Rate**
1992	6,045	17.6	3,636	10.6	2,409	7.0
1993	6,172	17.7	3,686	10.6	2,486	7.1
1994	6,066	16.8	3,626	10.1	2,440	6.8
1995	6,290	16.7	3,776	10.0	2,514	6.7
1996	6,408	16.1	3,823	9.6	2,585	6.5
1997	6,403	15.9	3,752	9.3	2,651	6.6
1992-97	37,384	16.8	22,299	10.0	15,085	6.8

SOURCE: Utah Hospital Inpatient Discharge Database, 1992-97, Utah Department of Health.

*Number of c-section deliveries (overall, primary, or repeat).

**Rate per 100 hospital deliveries

**Table 3: Counts and Rates of Primary C-section (Per 100 Hospital Deliveries with No Previous C-section)
By Age and Year Inpatient Discharges from Utah Hospitals: 1992-1997**

YEAR	ALL AGES		AGES < 18		AGES 18-34		AGES > 34	
	Number*	Rate**	Number*	Rate**	Number*	Rate**	Number*	Rate**
1992	3,636	11.8	170	13.3	3,090	11.5	376	14.1
1993	3,686	11.8	153	11.5	3,197	11.8	331	12.7
1994	3,626	11.2	143	12.7	3,054	10.9	407	13.4
1995	3,776	11.2	137	11.9	3,202	10.9	429	13.7
1996	3,823	10.7	124	12.2	3,254	10.4	442	13.3
1997	3,752	10.4	117	11.9	3,203	10.1	430	12.5
1992-97	22,299	11.2	844	12.2	19,000	10.9	2,415	13.3

SOURCE: Utah Hospital Inpatient Discharge Database, 1992-97, Utah Department of Health.

*-Total number of hospitalizations for primary c-section

** -Rate per 100 hospital deliveries with no previous c-section

**Table 4: Counts and Rates of Repeat C-section (per 100 hospital deliveries with previous c-section)
by Age And Year: Inpatient Discharges from Utah Hospitals: 1992-1997**

YEAR	ALL AGES		AGES < 18		AGES 18-34		AGES > 34	
	Number*	Rate**	Number*	Rate**	Number*	Rate**	Number*	Rate**
1992	2,409	68.5	9	75.0	2,081	68.0	319	71.8
1993	2,486	68.2	10	66.7	2,096	67.1	378	74.4
1994	2,440	65.4	2	50.0	2,024	65.3	409	66.2
1995	2,514	63.8	6	75.0	2,089	63.8	414	63.7
1996	2,585	61.8	5	62.5	2,107	60.8	473	66.4
1997	2,651	62.7	8	100.0	2,129	61.9	514	66.0
1992-97	15,085	64.9	40	72.7	12,526	64.4	2,507	67.6

SOURCE: Utah Hospital Inpatient Discharge Database, 1992-97, Utah Department of Health.

*Total number of hospitalizations for repeat c-sections

**Rate per 100 hospital deliveries with at least one previous c-section

**Table 5 (page 1 of 5): Counts and Rates of Hospitalizations for C-section By Indication and Year
Inpatient Discharges from Utah Hospitals: 1992-1997**

Previous c-section

YEAR	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
	with C.S. & ind.	NUMBER OF with C.S.	DISCHARGES with ind- ication	all del- iveries	% cesa- rean	contri- bution	%age cot- ribution	% indi- cation
1992	2,114	6,045	3,155	34,321	67.0	6.2	35.0	9.2
1993	2,232	6,172	3,342	34,784	66.8	6.4	36.2	9.6
1994	2,192	6,066	3,434	36,048	63.8	6.1	36.1	9.5
1995	2,242	6,290	3,618	37,625	62.0	6.0	35.6	9.6
1996	2,311	6,408	3,862	39,903	59.8	5.8	36.1	9.7
1997	2,384	6,403	3,882	40,221	61.4	5.9	37.2	9.7
1992-97	13,475	37,384	21,293	222,902	63.3	6.0	36.0	9.6

(continues)

SOURCE: Utah Hospital Inpatient Discharge Database, 1992-97, Utah Department of Health.

Column (6)-Number of c-section deliveries with Previous c-section per 100 deliveries with this indication

Column (7)-Number of c-section deliveries with Previous c-section per 100 hospital deliveries

Column (8)-Number of c-section deliveries with Previous c-section per 100 c-section deliveries

Column (9)-Number of deliveries with Previous c-section per 100 hospital deliveries

**Table 5 (page 2 of 5): Counts and Rates of Hospitalizations for C-section By Indication and Year
Inpatient Discharges from Utah Hospitals: 1992-1997**

Breech presentation

YEAR	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
	with C.S. & ind.	NUMBER OF with C.S.	DISCHARGES with ind- ication	all del- iveries	% cesa- rean	contri- bution	%age cot- ribution	% indi- cation
1992	834	6,045	919	34,321	90.8	2.4	13.8	2.7
1993	839	6,172	932	34,784	90.0	2.4	13.6	2.7
1994	877	6,066	965	36,048	90.9	2.4	14.5	2.7
1995	983	6,290	1,084	37,625	90.7	2.6	15.6	2.9
1996	1,072	6,408	1,201	39,903	89.3	2.7	16.7	3.0
1997	975	6,403	1,091	40,221	89.4	2.4	15.2	2.7
1992-97	5,580	37,384	6,192	222,902	90.1	2.5	14.9	2.8
(continues)								

SOURCE: Utah Hospital Inpatient Discharge Database, 1992-97, Utah Department of Health.

Column (6)-Number of c-section deliveries with breech presentation per 100 deliveries with this indication

Column (7)-Number of c-section deliveries with breech presentation per 100 hospital deliveries

Column (8)-Number of c-section deliveries with breech presentation per 100 c-section deliveries

Column (9)-Number of deliveries with breech presentation per 100 hospital deliveries

**Table 5 (page 3 of 5): Counts and Rates of Hospitalizations for C-section By Indication and Year
Inpatient Discharges from Utah Hospitals: 1992-1997**

Dystocia

YEAR	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
	with C.S. & ind.	NUMBER OF with C.S.	DISCHARGES with ind- ication	all del- iveries	% cesa- rean	contri- bution	%age cot- ribution	% indi- cation
1992	1,937	6,045	4,114	34,321	47.1	5.6	32.0	12.0
1993	1,871	6,172	3,649	34,784	51.3	5.4	30.3	10.5
1994	1,799	6,066	3,464	36,048	51.9	5.0	29.7	9.6
1995	1,870	6,290	3,610	37,625	51.8	5.0	29.7	9.6
1996	1,924	6,408	3,915	39,903	49.1	4.8	30.0	9.8
1997	1,901	6,403	3,995	40,221	47.6	4.7	29.7	9.9
1992-97	11,302	37,384	22,747	222,902	49.7	5.1	30.2	10.2

(continues)

SOURCE: Utah Hospital Inpatient Discharge Database, 1992-97, Utah Department of Health.

Column (6)-Number of c-section deliveries with dystocia per 100 deliveries with this indication

Column (7)-Number of c-section deliveries with dystocia per 100 hospital deliveries

Column (8)-Number of c-section deliveries with dystocia per 100 c-section deliveries

Column (9)-Number of deliveries with dystocia per 100 hospital deliveries

**Table 5 (page 4 of 5): Counts and Rates of Hospitalizations for C-section By Indication and Year
Inpatient Discharges from Utah Hospitals: 1992-1997**

Fetal distress

YEAR	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
	with C.S. & ind.	NUMBER OF with C.S.	DISCHARGES with ind- ication	all del- iveries	% cesa- rean	contri- bution	%age cot- ribution	% indi- cation
1992	431	6,045	1,491	34,321	28.9	1.3	7.1	4.3
1993	461	6,172	1,505	34,784	30.6	1.3	7.5	4.3
1994	470	6,066	1,902	36,048	24.7	1.3	7.7	5.3
1995	477	6,290	2,004	37,625	23.8	1.3	7.6	5.3
1996	480	6,408	2,237	39,903	21.5	1.2	7.5	5.6
1997	524	6,403	2,656	40,221	19.7	1.3	8.2	6.6
1992-97	2,843	37,384	11,795	222,902	24.1	1.3	7.6	5.3

(continues)

SOURCE: Utah Hospital Inpatient Discharge Database, 1992-97, Utah Department of Health.

Column (6)-Number of c-section deliveries with fetal distress per 100 deliveries with this indication

Column (7)-Number of c-section deliveries with fetal distress per 100 hospital deliveries

Column (8)-Number of c-section deliveries with fetal distress per 100 c-section deliveries

Column (9)-Number of deliveries with fetal distress per 100 hospital deliveries

**Table 5 (page 5 of 5): Counts and Rates of Hospitalizations for C-section By Indication and Year
Inpatient Discharges from Utah Hospitals: 1992-1997**

Other

42.	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
YEAR	NUMBER OF DISCHARGES				RATES			
	with C.S. & ind.	with C.S.	with ind- ication	all del- iveries	% cesa- rean	contri- bution	%age cot- ribution	% indi- cation
1992	729	6,045	24,642	34,321	3.0	2.1	12.1	71.8
1993	769	6,172	25,356	34,784	3.0	2.2	12.5	72.9
1994	728	6,066	26,283	36,048	2.8	2.0	12.0	72.9
1995	718	6,290	27,309	37,625	2.6	1.9	11.4	72.6
1996	621	6,408	28,688	39,903	2.2	1.6	9.7	71.9
1997	619	6,403	28,597	40,221	2.2	1.5	9.7	71.1
1992-97	4,184	37,384	160,875	222,902	2.6	1.9	11.2	72.2

SOURCE: Utah Hospital Inpatient Discharge Database, 1992-97, Utah Department of Health.

Column (6)-Number of c-section deliveries with this indication per 100 deliveries with this indication

Column (7)-Number of c-section deliveries with this indication per 100 hospital deliveries

Column (8)-Number of c-section deliveries with this indication per 100 c-section deliveries

**Table 6: Counts and Rates of Hospitalizations for Overall C-section by Indication and Age
Inpatient Discharges from Utah Hospitals: 1992-1997**

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
AGE GROUPS	NUMBER OF DISCHARGES				RATES			
	with C.S. & indic.	with C.S.	with ind- ication	all del- iveries	% cesa- rean	contri- bution	%age cot- ribution	% indi- cation

Previous cesarean								
All Ages	13,462	37,331	21,276	222,680	63.3	6.0	36.1	9.6
Age<18	35	883	50	6,944	70.0	0.5	4.0	0.7
Age 18-34	11,127	31,526	17,765	193,832	62.6	5.7	35.3	9.2
Age 35+	2,300	4,922	3,461	21,904	66.5	10.5	46.7	15.8
Breech presentation								
All Ages	5,572	37,331	6,184	222,680	90.1	2.5	14.9	2.8
Age<18	208	883	232	6,944	89.7	3.0	23.6	3.3
Age 18-34	4,823	31,526	5,337	193,832	90.4	2.5	15.3	2.8
Age 35+	541	4,922	615	21,904	88.0	2.5	11.0	2.8
Dystocia								
All Ages	11,288	37,331	22,714	222,680	49.7	5.1	30.2	10.2
Age<18	416	883	887	6,944	46.9	6.0	47.1	12.8
Age 18-34	9,789	31,526	19,894	193,832	49.2	5.1	31.1	10.3
Age 35+	1,083	4,922	1,933	21,904	56.0	4.9	22.0	8.8
Fetal distress								
All Ages	2,834	37,331	11,780	222,680	24.1	1.3	7.6	5.3
Age<18	112	883	485	6,944	23.1	1.6	12.7	7.0
Age 18-34	2,381	31,526	10,126	193,832	23.5	1.2	7.6	5.2
Age 35+	341	4,922	1,169	21,904	29.2	1.6	6.9	5.3
Other								
All Ages	4,175	37,331	160,726	222,680	2.6	1.9	11.2	72.2
Age<18	112	883	5,290	6,944	2.1	1.6	12.7	76.2
Age 18-34	3,406	31,526	140,710	193,832	2.4	1.8	10.8	72.6
Age 35+	657	4,922	14,726	21,904	4.5	3.0	13.3	67.2

SOURCE: Utah Hospital Inpatient Discharge Database, 1992-97, Utah Department of Health.

Column (6)-Number of c-section deliveries with this indication per 100 deliveries with this indication

Column (7)-Number of c-section deliveries with this indication per 100 hospital deliveries

Column (8)-Number of c-section deliveries with this indication per 100 c-section deliveries

Column (9)-Number of deliveries with this indication per 100 hospital deliveries

**Table 7: Number of Hospital Discharges, Average Length of Stay (Days), and Average Charges (\$)
C-section Compared to other Modes of Delivery, Inpatient Discharge from Utah Hospitals: 1992-97**

YEAR	<u>NO. OF DELIVERIES</u>		<u>MEAN LENGTH OF STAY</u>		<u>MEAN OF CHARGES(\$)</u>	
	cesarean	other	cesarean	other	cesarean	other
1992	6,045	28,276	3.7	1.7	4,111	2,015
1993	6,172	28,612	3.5	1.6	4,353	2,136
1994	6,066	29,982	3.4	1.5	4,494	2,208
1995	6,290	31,335	3.2	1.4	4,689	2,377
1996	6,408	33,495	3.3	1.4	5,073	2,477
1997	6,399	33,806	3.3	1.5	5,418	2,631
1992-97	37,380	185,506	3.4	1.5	4,700	2,322

SOURCE: Utah Hospital Inpatient Discharge Database, 1992-97,Utah Department of Health.

**Table 8: Number of Hospital Discharges, Average Length of Stay (Days) and Average Charges (\$)
C-section with Complications and Without Complications vs. Other Modes of Delivery
Inpatient Discharge from Utah Hospitals: 1992-97**

YEAR	NO. OF DELIVERIES			MEAN LENGTH OF STAY			MEAN OF CHARGES(\$)		
	CSWC	CSNC	NCS	CSWC	CSNC	NCS	CSWC	CSNC	NCS
1992	1,241	4,804	28,276	4.6	3.4	1.7	5,181	3,835	2,015
1993	1,316	4,832	28,612	4.5	3.3	1.6	5,459	4,050	2,136
1994	1,250	4,524	29,982	4.3	3.1	1.5	5,739	4,135	2,208
1995	1,358	4,932	31,335	4.0	3.0	1.4	6,117	4,296	2,377
1996	1,465	4,943	33,495	4.3	3.0	1.4	6,678	4,597	2,477
1997	1,608	4,795	33,818	4.1	3.1	1.5	6,703	4,985	2,631
1992-97	8,238	28,830	185,518	4.3	3.2	1.5	6,029	4,319	2,322

SOURCE: Utah Hospital Inpatient Discharge Database, 1992-97, Utah Department of Health.

CSWC 📄 C-section Deliveries With Complications.

CSNC 📄 C-section Deliveries With No Complications.

NCS 📄 Non-C-section (Vaginal) Deliveries

Table 9: Rate of Hospital Deliveries, Average Length of Stay (Days)and Average Charges (\$s)
C-section Deliveries Compared to Other Modes of Delivery
Inpatient Discharge from Utah Hospitals: 1992-97

Type of Payer	(2) RATE OF DELIVERIES cesarean	(3) other	(4) MEAN LENGTH OF STAY cesarean	(5) other	(6) MEAN OF CHARGES(\$) cesarean	(7) other	(8) Total # of Deliveries
All Payers	16.8	83.2	3.4	1.5	4,699	2,322	222,902
Medicare	33.5	66.5	4.0	1.9	5,964	3,219	206
Medicaid	17.3	82.7	3.5	1.4	4,838	2,347	51,043
Other Government	18.7	81.3	3.2	1.7	4,679	2,477	5,359
Blue Cross Blue Shield	17.0	83.0	3.4	1.6	4,490	2,305	19,246
Other Commercial	16.8	83.2	3.5	1.6	4,583	2,268	50,164
Managed Care	16.8	83.2	3.3	1.5	4,637	2,329	78,477
Self Pay	11.6	88.4	3.1	1.3	4,953	2,299	9,462
Unclassified	19.2	80.8	3.7	1.7	4,891	2,137	1,386
Unknown	16.6	83.4	3.0	1.5	4,534	2,164	3,840
Not reported	16.3	83.7	4.7	1.7	6,304	2,679	3,719

SOURCE: Utah Hospital Inpatient Discharge Database, 1992-97, Utah Department of Health.
Column (2)-Percent of hospital deliveries which are c-section.
Column (3)-Percent of hospital deliveries which are non-c-section.

Table 10: Primary C-section Rate per 100 Hospital Deliveries, Utah: 1992-97

Hospital Category	ALL AGES	AGES<18	AGES 18-34	AGES>34
Neonatal intensive care unit not available	9.9	13.3	9.7	10.4
Neonatal intensive care unit available	10.2	10.7	9.9	12.0
No obstetrician on staff	12.9	19.8	12.4	14.8
Obstetrician on staff	9.8	11.4	9.6	10.8
No anesthesiologist on staff	12.8	17.5	12.4	14.7
Anesthesiologist on staff	9.9	11.7	9.7	10.9
1,000+ deliveries/year	9.9	11.7	9.7	11.0
120 - 999 deliveries/year	10.3	13.2	10.1	11.0
< 120 deliveries/year	12.9	16.2	12.7	13.0
Rural place of occurrence	12.1	15.2	11.8	13.6
Urban place of occurrence	9.8	11.7	9.6	10.8

SOURCE: Utah Hospital Inpatient Discharge Database, 1992-1997

Table 11: C-Sections Rates (per 100 Dystocia Deliveries)for Deliveries with Indication of Dystocia by Type of Hospital and the Age Category)

Hospital Category	ALL AGES	AGES<18	AGES 18-34	AGES>34
Neonatal intensive care unit not available	55.5	53.7	55.2	60.3
Neonatal intensive care unit available	40.7	37.3	40.0	49.4
No obstetrician on staff	55.7	57.6	55.1	61.1
Obstetrician on staff	49.1	44.8	48.6	55.6
No anesthesiologist on staff	47.4	54.0	46.6	49.6
Anesthesiologist on staff	49.9	45.9	49.4	56.4
1,000+ deliveries/year	49.1	45.1	48.5	56.0
120 - 999 deliveries/year	51.5	49.8	51.3	55.3
< 120 deliveries/year	57.5	61.5	57.1	60.4
Rural place of occurrence	52.1	52.2	51.9	54.3
Urban place of occurrence	49.4	45.8	48.9	56.2

SOURCE: Utah Hospital Inpatient Discharge Database, 1992-97

Table 12 (page 1 of 2): Counts And Rates of Overall C-section (Per 100 Hospital Deliveries)by Age And Hospital Inpatient Discharges From Utah Hospitals: 1992-1997

HOSPITAL NAME	ALL AGES		AGES < 18		AGES 18-34		AGES > 34	
	Number*	Rate**	Number*	Rate**	Number*	Rate**	Number*	Rate**
ALLEN MEMORIAL HOSPITAL	49	20.4	2	10.5	40	21.4	7	24.1
ALTA VIEW HOSPITAL	1,481	16.0	13	7.6	1,266	15.8	199	18.7
AMERICAN FORK HOSPITAL	1,388	13.0	22	10.0	1,184	12.7	180	16.0
ASHLEY VALLEY MEDICAL CENTER	224	15.9	4	5.8	194	15.6	26	26.3
BEAR RIVER VALLEY HOSPITAL	61	16.7	2	12.5	54	17.3	5	13.2
BEAVER VALLEY HOSPITAL	99	24.0	4	22.2	84	23.7	9	29.0
BRIGHAM CITY COMMUNITY HOSPITAL	519	19.4	13	12.1	449	19.5	57	21.8
CASTLEVIEW HOSPITAL	313	13.8	8	6.2	268	13.6	37	22.2
CENTRAL VALLEY MEDICAL CENTER	77	22.2	3	20.0	62	20.9	10	32.3
COTTONWOOD HOSPITAL	3,344	18.7	45	15.6	2,831	18.2	468	23.6
DAVIS HOSPITAL & MEDICAL CENTER	1,622	19.1	58	16.7	1,400	18.9	164	23.0
DELTA COMMUNITY MEDICAL CENTER	115	19.3	1	4.3	98	19.2	16	25.8
DIXIE MEDICAL CENTER	1,324	18.3	36	18.9	1,118	17.5	170	25.1
UINTAH BASIN MEDICAL CENTER	598	27.6	27	25.5	522	27.7	49	28.7
FHP HOSPITAL	634	16.7	20	9.6	524	16.4	90	22.8
FILLMORE COMMUNITY MEDICAL CENTER	48	16.1	0	0.0	39	14.8	9	33.3
GARFIELD MEMORIAL HOSPITAL	75	27.8	1	14.3	69	28.9	4	17.4
GUNNISON VALLEY HOSPITAL	244	28.2	17	35.4	207	27.4	19	31.1
HCA ST. MARK'S HOSPITAL	3,044	21.3	72	18.6	2,529	20.5	443	27.9
JORDAN VALLEY HOSPITAL	652	11.7	11	6.9	565	11.5	75	15.4
(Continues)								

*Total number of c-section deliveries.

**Rate per 100 hospital deliveries.

Note: For interpreting differences between rates based on small numbers, please refer to Appendix C.

Table 12 (page 2 of 2): Counts And Rates of Overall C-section (Per 100 Hospital Deliveries)by Age And Hospital Inpatient Discharges From Utah Hospitals: 1992-1997

HOSPITAL NAME	____ALL AGES____		____ AGES < 18____		____ AGES 18-34____		____ AGES > 34____	
	Number*	Rate**	Number*	Rate**	Number*	Rate**	Number*	Rate**
KANE COUNTY HOSPITAL	39	20.6	3	42.9	30	18.5	6	30.0
LAKEVIEW HOSPITAL	1,030	22.0	19	19.8	860	21.4	150	27.3
LDS HOSPITAL	3,562	16.4	41	11.4	2,885	15.7	634	21.5
LOGAN REGIONAL HOSPITAL	1,280	11.7	22	10.8	1,092	11.1	164	17.0
MCKAY DEE HOSPITAL	2,619	17.6	77	12.8	2,230	17.2	307	23.3
MILFORD VALLEY MEMORIAL HOSPITAL	9	14.3	0	0.0	8	14.3	1	20.0
MONUMENT VALLEY ADVENTIST HOSPITAL	10	6.9	0	0.0	9	7.7	1	5.6
MOUNTAIN VIEW HOSPITAL	1,017	13.8	25	13.0	890	13.5	102	17.8
OGDEN REGIONAL MEDICAL CENTER	1,788	16.7	55	12.9	1,556	16.3	177	23.7
OREM COMMUNITY HOSPITAL	772	15.4	19	20.9	702	15.3	50	15.4
PIONEER VALLEY HOSPITAL	822	17.7	31	12.4	721	17.6	70	22.4
SALT LAKE REGIONAL MEDICAL CENTER	1,576	14.7	20	7.8	1,273	13.9	283	22.3
SAN JUAN HOSPITAL	90	13.7	6	22.2	71	12.6	13	21.3
SANPETE VALLEY HOSPITAL	116	16.8	9	23.7	97	16.3	10	17.5
SEVIER VALLEY HOSPITAL	254	21.1	13	20.0	219	21.4	22	19.1
TOOELE VALLEY REGIONAL MEDICAL CENTER	85	19.3	4	12.5	62	19.3	8	34.8
UNIVERSITY OF UTAH HOSPITAL	2,465	18.0	121	9.6	1,936	17.5	408	30.0
UTAH VALLEY MEDICAL CENTER	3,438	14.7	46	11.1	2,947	14.1	427	21.6
VALLEY VIEW MEDICAL CENTER	370	19.1	8	15.4	325	18.7	37	26.2
WASATCH COUNTY HOSPITAL	131	19.3	6	22.2	110	19.3	15	18.1

SOURCE: Utah Hospital Inpatient Discharge Database, 1992-97, Utah Department of Health.

*Total number of c-section deliveries.

**Rate per 100 hospital deliveries.

Note: For interpreting differences between rates based on small numbers, please refer to Appendix C.

**Table 13 (page 1 of 2): Counts and Rates of Primary C-section (Per 100 Hospital Deliveries with No Previous C-section)
By Age and Hospital Inpatient Discharges from Utah Hospitals: 1992-1997**

HOSPITAL NAME	ALL AGES		AGES < 18		AGES 18-34		AGES > 34	
	Number*	Rate**	Number*	Rate**	Number*	Rate**	Number*	Rate**
ALLEN MEMORIAL HOSPITAL	38	16.7	2	10.5	31	17.5	5	18.5
ALTA VIEW HOSPITAL	762	9.3	13	7.6	670	9.4	77	8.7
AMERICAN FORK HOSPITAL	801	8.2	20	9.2	706	8.2	73	7.5
ASHLEY VALLEY MEDICAL CENTER	132	10.0	4	5.8	110	9.5	18	19.8
BEAR RIVER VALLEY HOSPITAL	33	9.9	2	12.5	28	9.9	3	8.3
BEAVER VALLEY HOSPITAL	76	19.7	3	17.6	66	19.8	5	19.2
BRIGHAM CITY COMMUNITY HOSPITAL	262	11.4	13	12.1	227	11.4	22	10.4
CASTLEVIEW HOSPITAL	198	9.4	6	4.7	171	9.3	21	14.1
CENTRAL VALLEY MEDICAL CENTER	48	15.1	3	20.0	38	13.9	6	22.2
COTTONWOOD HOSPITAL	1,724	11.2	41	14.4	1,504	11.1	179	11.5
DAVIS HOSPITAL & MEDICAL CENTER	971	12.9	56	16.2	832	12.6	83	14.2
DELTA COMMUNITY MEDICAL CENTER	77	14.6	1	4.3	67	14.9	9	16.4
DIXIE MEDICAL CENTER	785	12.2	34	18.1	655	11.5	96	17.0
UINTAH BASIN MEDICAL CENTER	363	19.4	26	24.8	303	18.8	34	22.5
FHP HOSPITAL	403	12.1	20	9.6	337	12.0	46	14.4
FILLMORE COMMUNITY MEDICAL CENTER	35	12.8	0	0.0	29	12.0	6	26.1
GARFIELD MEMORIAL HOSPITAL	47	20.3	1	14.3	43	21.3	2	9.5
GUNNISON VALLEY HOSPITAL	147	19.2	16	34.0	121	18.2	10	19.2
HCA ST. MARK'S HOSPITAL	1,865	14.8	68	17.8	1,568	14.4	229	17.7
JORDAN VALLEY HOSPITAL	363	7.3	11	6.9	329	7.4	23	5.8

(Continues)

*Total number of hospitalizations for first time c-section

**Rate per 100 hospital deliveries with no previous c-section

Note: For interpreting differences between rates based on small numbers, please refer to Appendix C.

**Table 13 (page 2 of 2): Counts and Rates of Primary C-section (Per 100 Hospital Deliveries with No Previous C-section)
By Age and Hospital Inpatient Discharges from Utah Hospitals: 1992-1997**

HOSPITAL NAME	ALL AGES		AGES < 18		AGES 18-34		AGES > 34	
	Number*	Rate**	Number*	Rate**	Number*	Rate**	Number*	Rate**
KANE COUNTY HOSPITAL	28	16.0	3	42.9	21	13.9	4	23.5
LAKEVIEW HOSPITAL	547	13.4	19	19.8	459	13.0	69	15.2
LDS HOSPITAL	2,064	10.7	36	10.2	1,712	10.4	314	12.8
LOGAN REGIONAL HOSPITAL	800	7.9	19	9.5	698	7.6	81	9.7
MCKAY DEE HOSPITAL	1,574	12.0	75	12.6	1,340	11.7	154	14.3
MILFORD VALLEY MEMORIAL HOSPITAL	9	14.3	0	0.0	8	14.3	1	20.0
MONUMENT VALLEY ADVENTIST HOSPITAL	8	5.9	0	0.0	8	7.3	0	0.0
MOUNTAIN VIEW HOSPITAL	591	8.7	24	12.5	516	8.4	51	10.2
OGDEN REGIONAL MEDICAL CENTER	1,147	11.8	52	12.3	1,003	11.5	92	14.7
OREM COMMUNITY HOSPITAL	466	10.3	17	19.1	422	10.2	26	9.2
PIONEER VALLEY HOSPITAL	469	11.3	30	12.1	406	11.1	33	12.7
SALT LAKE REGIONAL MEDICAL CENTER	987	10.2	19	7.5	827	9.9	141	13.2
SAN JUAN HOSPITAL	50	8.4	6	22.2	38	7.4	6	11.5
SANPETE VALLEY HOSPITAL	104	15.5	9	23.7	85	14.7	10	18.5
SEVIER VALLEY HOSPITAL	173	15.5	13	20.0	142	15.1	18	16.5
TOOELE VALLEY REGIONAL MEDICAL CENTER	57	14.0	4	12.5	44	14.8	2	11.8
UNIVERSITY OF UTAH HOSPITAL	1,793	14.5	120	9.6	1,418	14.1	255	22.7
UTAH VALLEY MEDICAL CENTER	2,023	9.5	45	10.9	1,777	9.3	186	11.5
VALLEY VIEW MEDICAL CENTER	195	11.6	7	13.7	170	11.2	18	16.4
WASATCH COUNTY HOSPITAL	84	13.5	6	22.2	71	13.7	7	9.5

SOURCE: Utah Hospital Inpatient Discharge Database, 1992-97, Utah Department of Health.

*Total number of hospitalizations for first time c-section

**Rate per 100 hospital deliveries with no previous c-section

Note: For interpreting differences between rates based on small numbers, please refer to Appendix C.

Table 14 (page 1 of 2):

Number of All Deliveries and C-section Sections by Hospital: Utah 1992 - 1997

	____1992____		____1993____		____1994____		____1995____		____1996____		____1997____	
	C-sect	Deliv	C-sect	Deliv	C-sect	Deliv	C-sect	Deliv	C-sect	Deliv	C-sect	Deliv
HOSPITALS WITH NICU												
LDS HOSPITAL	592	3,497	623	3,458	614	3,534	512	3,370	621	3,785	600	4,083
MCKAY DEE HOSPITAL	478	2,609	413	2,290	391	2,273	396	2,342	461	2,666	480	2,727
OGDEN REGIONAL MEDICAL CENTER	275	1,685	295	1,815	311	1,897	326	1,714	307	1,833	274	1,780
UNIVERSITY OF UTAH HOSPITAL	357	1,996	388	2,069	394	2,123	411	2,267	438	2,558	477	2,644
UTAH VALLEY MEDICAL CENTER	601	3,886	570	3,780	579	3,803	581	3,861	554	4,044	553	4,009
URBAN HOSPITALS												
ALTA VIEW HOSPITAL	282	1,326	269	1,426	234	1,543	206	1,564	238	1,634	252	1,780
AMERICAN FORK HOSPITAL	175	1,220	196	1,380	213	1,715	263	1,974	252	2,114	289	2,264
COTTONWOOD HOSPITAL	559	2,836	588	2,949	507	2,885	540	2,883	560	3,102	590	3,214
DAVIS HOSPITAL & MEDICAL CENTER	188	1,015	128	721	242	1,185	327	1,816	368	1,946	369	1,800
DIXIE MEDICAL CENTER	167	949	216	1,061	213	1,195	196	1,220	274	1,391	258	1,426
FHP HOSPITAL												
HCA ST. MARK'S HOSPITAL	741	2,975	551	2,457	430	1,885	460	2,054	409	2,263	453	2,671
JORDAN VALLEY HOSPITAL	68	592	100	755	98	850	110	938	131	1,206	145	1,228
LAKEVIEW HOSPITAL	175	800	186	775	176	800	181	801	160	768	152	728
LOGAN REGIONAL HOSPITAL	187	1,722	212	1,713	203	1,745	222	1,786	230	1,999	226	2,018
MOUNTAIN VIEW HOSPITAL												
OREM COMMUNITY HOSPITAL	111	867	100	849	96	735	129	685	127	740	209	1,130
PIIONEER VALLEY HOSPITAL	170	896	148	829	143	776	129	737	130	755	102	664
SALT LAKE REGIONAL MEDICAL CENTER	257	1,791	297	1,785	300	1,880	281	2,003	218	1,674	223	1,552
												(Continues)

Note: For interpreting differences between rates based on small numbers, please refer to Appendix C.

Table 14 (page 2 of 2):

Number of All Deliveries and C-Sections by Hospital: Utah 1992 - 1997

	____1992____		____1993____		____1994____		____1995____		____1996____		____1997____	
	C-sect	Deliv	C-sect	Deliv	C-sect	Deliv	C-sect	Deliv	C-sect	Deliv	C-sect	Deliv
RURAL HOSPITALS												
ALLEN MEMORIAL HOSPITAL	9	55	6	31	4	16	9	59	18	58	3	21
ASHLEY VALLEY MEDICAL CENTER	37	213	39	241	38	229	37	233	39	241	34	256
BEAR RIVER VALLEY HOSPITAL	10	48	12	75	6	64	11	51	9	70	13	58
BEAVER VALLEY HOSPITAL	14	56	16	74	23	74	20	88	10	46	16	75
BRIGHAM CITY COMMUNITY HOSPITAL	103	447	102	483	82	450	75	418	90	451	67	429
CASTLEVIEW HOSPITAL	58	367	51	384	42	337	63	372	54	392	45	409
CENTRAL VALLEY MEDICAL CENTER	2	14	14	49	11	42	9	68	24	84	17	90
DELTA COMMUNITY MEDICAL CENTER	14	87	19	102	18	98	22	111	19	98	23	100
UINTAH BASIN MEDICAL CENTER	58	272	114	404	112	397	113	365	96	361	105	364
FILLMORE COMMUNITY MEDICAL CENTER	12	57	7	57	9	54	3	38	7	41	10	52
GARFIELD MEMORIAL HOSPITAL	20	55	16	45	11	46	11	38	5	37	12	49
GUNNISON VALLEY HOSPITAL	29	119	37	149	40	129	48	132	53	165	37	171
KANE COUNTY HOSPITAL	4	34	4	27	9	40	6	24	9	38	7	26
SAN JUAN HOSPITAL	16	127	15	59	18	162	21	113	9	52	11	143
SANPETE VALLEY HOSPITAL	14	110	10	102	19	101	17	122	20	118	36	137
SEVIER VALLEY HOSPITAL	44	164	35	149	37	188	59	249	33	206	46	249
TOOELE VALLEY REGIONAL MEDICAL CENTER	.	.	45	200	19	101	9	50	2	15	10	75
VALLEY VIEW MEDICAL CENTER	25	80	89	375	71	407	94	467	71	470	20	136
WASATCH COUNTY HOSPITAL	25	118	19	103	14	102	20	114	25	109	28	133

SOURCE: Utah Hospital Inpatient Discharge Database, 1992-97

Note: For interpreting differences between rates based on small numbers, please refer to Appendix C.

Table 15 (page 1 of 2): Overall C-Section Rates (Per 100 Hospital Deliveries) by Hospital: Utah, 1992-97

HOSPITAL NAME	1992	1993	1994	1995	1996	1997
HOSPITALS WITH NICU						
LDS HOSPITAL	16.9	18.0	17.4	15.2	16.4	14.7
MCKAY DEE HOSPITAL	18.3	18.0	17.2	16.9	17.3	17.6
OGDEN REGIONAL MEDICAL CENTER	16.3	16.3	16.4	19.0	16.7	15.4
UNIVERSITY OF UTAH HOSPITAL	17.9	18.8	18.6	18.1	17.1	18.0
UTAH VALLEY MEDICAL CENTER	15.5	15.1	15.2	15.0	13.7	13.8
URBAN HOSPITALS						
ALTA VIEW HOSPITAL	21.3	18.9	15.2	13.2	14.6	14.2
AMERICAN FORK HOSPITAL	14.3	14.2	12.4	13.3	11.9	12.8
COTTONWOOD HOSPITAL	19.7	19.9	17.6	18.7	18.1	18.4
DAVIS HOSPITAL & MEDICAL CENTER	18.5	17.8	20.4	18.0	18.9	20.5
DIXIE MEDICAL CENTER	17.6	20.4	17.8	16.1	19.7	18.1
FHP HOSPITAL	.	15.7	18.3	16.6	15.2	18.2
HCA ST. MARK'S HOSPITAL	24.9	22.4	22.8	22.4	18.1	17.0
JORDAN VALLEY HOSPITAL	11.5	13.2	11.5	11.7	10.9	11.8
LAKEVIEW HOSPITAL	21.9	24.0	22.0	22.6	20.8	20.9
LOGAN REGIONAL HOSPITAL	10.9	12.4	11.6	12.4	11.5	11.2
MOUNTAIN VIEW HOSPITAL	13.9	15.7	14.0	13.5	13.4	12.4
OREM COMMUNITY HOSPITAL	12.8	11.8	13.1	18.8	17.2	18.5
PIONEER VALLEY HOSPITAL	19.0	17.9	18.4	17.5	17.2	15.4
SALT LAKE REGIONAL MEDICAL CENTER	14.3	16.6	16.0	14.0	13.0	14.4
						(continues)

Note: For interpreting differences between rates based on small numbers, please refer to Appendix C.

Table 15 (page 2 of 2): Overall C-Section Rates (Per 100 Hospital Deliveries) by Hospital: Utah, 1992-97

HOSPITAL NAME	1992	1993	1994	1995	1996	1997
RURAL HOSPITALS						
ALLEN MEMORIAL HOSPITAL	16.4	19.4	25.0	15.3	31.0	14.3
ASHLEY VALLEY MEDICAL CENTER	17.4	16.2	16.6	15.9	16.2	13.3
BEAR RIVER VALLEY HOSPITAL	20.8	16.0	9.38	21.6	12.9	22.4
BEAVER VALLEY HOSPITAL	25.0	21.6	31.1	22.7	21.7	21.3
BRIGHAM CITY COMMUNITY HOSPITAL	23.0	21.1	18.2	17.9	20.0	15.6
CASTLEVIEW HOSPITAL	15.8	13.3	12.5	16.9	13.8	11.0
CENTRAL VALLEY MEDICAL CENTER	14.3	28.6	26.2	13.2	28.6	18.9
DELTA COMMUNITY MEDICAL CENTER	16.1	18.6	18.4	19.8	19.4	23.0
UINTAH BASIN MEDICAL CENTER	21.3	28.2	28.2	31.0	26.6	28.8
FILLMORE COMMUNITY MEDICAL CENTER	21.1	12.3	16.7	7.89	17.1	19.2
GARFIELD MEMORIAL HOSPITAL	36.4	35.6	23.9	28.9	13.5	24.5
GUNNISON VALLEY HOSPITAL	24.4	24.8	31.0	36.4	32.1	21.6
KANE COUNTY HOSPITAL	11.8	14.8	22.5	25.0	23.7	26.9
SAN JUAN HOSPITAL	12.6	25.4	11.1	18.6	17.3	7.69
SANPETE VALLEY HOSPITAL	12.7	9.80	18.8	13.9	16.9	26.3
SEVIER VALLEY HOSPITAL	26.8	23.5	19.7	23.7	16.0	18.5
TOOELE VALLEY REGIONAL MEDICAL CENTER	.	22.5	18.8	18.0	13.3	13.3
VALLEY VIEW MEDICAL CENTER	31.3	23.7	17.4	20.1	15.1	14.7
WASATCH COUNTY HOSPITAL	21.2	18.4	13.7	17.5	22.9	21.1

SOURCE: Utah Hospital Inpatient Discharge Database, 1992-97

Note: For interpreting differences between rates based on small numbers, please refer to Appendix C.

Table 16 (page 1 of 2): Number of Deliveries and Primary C-sections by Age Group and Hospital: Utah, 1992-1997

HOSPITAL NAME	NUMBER OF DELIVERIES				NUMBER OF PRIMARY C-SECTIONS			
	Age<18	Age 18-34	Age 35+	All Ages	Age<18	Age 18-34	Age 35+	All Ages
HOSPITALS WITH NICU	328	7,250	1,001	8,601	3,061	72,902	8,357	84,398
LDS HOSPITAL	36	1,712	314	2,064	359	18,411	2,949	21,727
MCKAY DEE HOSPITAL	75	1,340	154	1,574	602	12,975	1,320	14,907
OGDEN REGIONAL MEDICAL CENTER	52	1,003	92	1,147	428	9,548	747	10,724
UNIVERSITY OF UTAH HOSPITAL	120	1,418	255	1,793	1,259	11,037	1,360	13,657
UTAH VALLEY MEDICAL CENTER	45	1,777	186	2,023	413	20,931	1,981	23,383
URBAN HOSPITALS	391	9,929	1,207	11,534	3,061	105,458	12,023	120,591
ALTA VIEW HOSPITAL	13	670	77	762	170	8,036	1,062	9,273
AMERICAN FORK HOSPITAL	20	706	73	801	220	9,313	1,126	10,667
COTTONWOOD HOSPITAL	41	1,504	179	1,724	289	15,588	1,986	17,869
DAVIS HOSPITAL & MEDICAL CENTER	56	832	83	971	347	7,422	714	8,483
DIXIE MEDICAL CENTER	34	655	96	785	190	6,374	678	7,242
FHP HOSPITAL	20	337	46	403	209	3,198	394	3,801
HCA ST. MARK'S HOSPITAL	68	1,568	229	1,865	387	12,327	1,587	14,305
JORDAN VALLEY HOSPITAL	11	329	23	363	160	4,918	486	5,569
LAKEVIEW HOSPITAL	19	459	69	547	96	4,025	549	4,672
LOGAN REGIONAL HOSPITAL	19	698	81	800	204	9,812	962	10,983
MOUNTAIN VIEW HOSPITAL	24	516	51	591	193	6,614	572	7,379
OREM COMMUNITY HOSPITAL	17	422	26	466	91	4,589	325	5,006
PIONEER VALLEY HOSPITAL	30	406	33	469	249	4,092	313	4,657
SALT LAKE REGIONAL MEDICAL CENTER	19	827	141	987	256	9,150	1,269	10,685
								(Continues)

Note: For interpreting differences between rates based on small numbers, please refer to Appendix C.

Table 16 (page 2 of 2): Number of Deliveries and Primary C-Sections by Age Group and Hospital: Utah, 1992-1997

HOSPITAL NAME	NUMBER OF DELIVERIES				NUMBER OF PRIMARY C-SECTIONS			
	Age<18	Age 18-34	Age 35+	All Ages	Age<18	Age 18-34	Age 35+	All Ages
RURAL HOSPITALS	125	1,821	207	2,164	823	15,472	1,524	17,913
ALLEN MEMORIAL HOSPITAL	2	31	5	38	19	187	29	240
ASHLEY VALLEY MEDICAL CENTER	4	110	18	132	69	1,245	99	1,413
BEAR RIVER VALLEY HOSPITAL	2	28	3	33	16	312	38	366
BEAVER VALLEY HOSPITAL	3	66	5	76	18	355	31	413
BRIGHAM CITY COMMUNITY HOSPITAL	13	227	22	262	107	2,308	262	2,678
CASTLEVIEW HOSPITAL	6	171	21	198	129	1,965	167	2,261
CENTRAL VALLEY MEDICAL CENTER	3	38	6	48	15	297	31	347
DELTA COMMUNITY MEDICAL CENTER	1	67	9	77	23	511	62	596
UINTAH BASIN MEDICAL CENTER	26	303	34	363	106	1,886	171	2,163
FILLMORE COMMUNITY MEDICAL CENTER	0	29	6	35	9	263	27	299
GARFIELD MEMORIAL HOSPITAL	1	43	2	47	7	239	23	270
GUNNISON VALLEY HOSPITAL	16	121	10	147	48	755	61	865
KANE COUNTY HOSPITAL	3	21	4	28	7	162	20	189
SAN JUAN HOSPITAL	6	38	6	50	27	563	61	656
SANPETE VALLEY HOSPITAL	9	85	10	104	38	595	57	690
SEVIER VALLEY HOSPITAL	13	142	18	173	65	1,025	115	1,205
TOOELE VALLEY REGIONAL MEDICAL CENTER	4	44	2	57	32	321	23	441
VALLEY VIEW MEDICAL CENTER	7	170	18	195	52	1,741	141	1,935
WASATCH COUNTY HOSPITAL	6	71	7	84	27	569	83	679

SOURCE: Utah Hospital Inpatient Discharge Database, 1992-97

Note: For interpreting differences between rates based on small numbers, please refer to Appendix C.

Table 17 (page 1 of 2):

**Counts And Rates of C-section By Indication of C-section And Hospital
Inpatient Discharges From Utah Hospitals: 1992-1997**

NAME OF HOSPITAL	PREVIOUS CESAREAN		BREECH PRESENTATION		___DYSTOCIA___		FETAL DISTRESS		___OTHER___	
	Number	Rate*	Number	Rate*	Number	Rate*	Number	Rate*	Number	Rate*
HOSPITALS WITH NICU	4,824	60.6	2,337	87.6	3,645	40.7	1,056	32.8	2,010	3.3
LDS HOSPITAL	1,363	60.6	537	89.4	920	42.9	303	26.4	439	2.8
MCKAY DEE HOSPITAL	938	58.1	447	93.1	758	47.1	150	39.6	326	3.0
OGDEN REGIONAL MEDICAL CENTER	583	64.9	267	93.0	556	52.7	137	45.5	245	3.0
UNIVERSITY OF UTAH HOSPITAL	594	52.0	465	76.5	705	49.4	253	22.9	448	4.8
UTAH VALLEY MEDICAL CENTER	1,346	65.3	621	89.7	706	26.0	213	74.5	552	3.1
URBAN HOSPITALS	7,427	63.5	2,825	92.5	6,467	56.2	1,459	19.8	1,808	2.1
ALTA VIEW HOSPITAL	682	65.0	230	90.6	400	52.4	68	14.5	101	1.5
AMERICAN FORK HOSPITAL	518	64.8	218	85.2	475	70.3	92	58.6	85	1.0
COTTONWOOD HOSPITAL	1,352	62.7	430	95.1	1,139	69.6	177	19.8	246	1.9
DAVIS HOSPITAL & MEDICAL CENTER	581	64.8	224	95.3	523	73.9	123	21.8	171	2.8
DIXIE MEDICAL CENTER	500	67.2	188	91.7	432	78.0	107	16.2	97	1.9
FHP HOSPITAL	204	47.3	96	89.7	187	48.4	78	12.9	69	3.0
HCA ST. MARK'S HOSPITAL	940	65.7	361	94.5	1,174	42.0	279	37.9	290	3.2
JORDAN VALLEY HOSPITAL	259	48.1	98	86.7	199	36.5	31	8.9	65	1.6
LAKEVIEW HOSPITAL	462	81.1	131	96.3	266	76.0	37	55.2	134	3.8
LOGAN REGIONAL HOSPITAL	379	55.7	259	92.8	453	50.7	92	6.7	97	1.2
MOUNTAIN VIEW HOSPITAL	408	74.7	181	94.3	214	58.0	73	45.9	141	2.3
OREM COMMUNITY HOSPITAL	278	61.1	105	96.3	248	44.0	75	26.5	66	1.8
PIONEER VALLEY HOSPITAL	332	70.3	103	91.2	255	71.2	60	35.1	72	2.0
SALT LAKE REGIONAL MEDICAL CENTER	532	57.4	201	91.4	502	55.2	167	18.5	174	2.3

(Continues)

*-Number of c-section deliveries with indication per 100 deliveries with the same indication

Note: For interpreting differences between rates based on small numbers, please refer to Appendix C.

**Table 17 (page 2 of 2): Counts And Rates of C-section By Indication of C-section And Hospital
Inpatient Discharges From Utah Hospitals: 1992-1997**

NAME OF HOSPITAL	PREVIOUS CESAREAN		BREECH PRESENTATION		___DYSTOCIA___		FETAL DISTRESS		___OTHER___	
	Number	Rate*	Number	Rate*	Number	Rate*	Number	Rate*	Number	Rate*

RURAL HOSPITALS	1,222	75.2	414	89.2	1,186	52.4	326	27.4	359	3.0
ALLEN MEMORIAL HOSPITAL	11	91.7	4	80.0	22	62.9	7	46.7	5	2.9
ASHLEY VALLEY MEDICAL CENTER	88	95.7	37	94.9	63	44.1	18	22.2	18	1.7
BEAR RIVER VALLEY HOSPITAL	28	90.3	5	83.3	16	72.7	2	9.5	10	3.5
BEAVER VALLEY HOSPITAL	23	82.1	9	100	46	95.8	9	50.0	12	3.9
BRIGHAM CITY COMMUNITY HOSPITAL	217	66.0	46	83.6	197	85.7	30	25.6	29	1.5
CASTLEVIEW HOSPITAL	98	73.1	58	86.6	82	38.1	42	23.6	33	2.0
CENTRAL VALLEY MEDICAL CENTER	29	100	8	100	23	59.0	3	33.3	14	5.3
DELTA COMMUNITY MEDICAL CENTER	36	55.4	13	92.9	34	43.6	10	14.3	22	6.0
UINTAH BASIN MEDICAL CENTER	215	80.2	46	90.2	224	33.1	83	30.6	30	3.3
FILLMORE COMMUNITY MEDICAL CENTER	13	52.0	6	100	8	47.1	3	25.0	18	7.5
GARFIELD MEMORIAL HOSPITAL	25	73.5	12	92.3	25	64.1	5	17.2	8	5.2
GUNNISON VALLEY HOSPITAL	68	95.8	24	92.3	107	71.8	27	58.7	18	3.1
KANE COUNTY HOSPITAL	11	78.6	4	100	17	53.1	0	0.0	7	5.1
SAN JUAN HOSPITAL	40	70.2	10	100	24	44.4	7	30.4	9	1.8
SANPETE VALLEY HOSPITAL	12	60.0	18	90.0	34	45.3	19	55.9	33	6.1
SEVIER VALLEY HOSPITAL	78	90.7	37	92.5	102	54.5	19	12.2	18	2.4
TOOELE VALLEY REGIONAL MEDICAL CENTER	27	79.4	10	100	23	59.0	12	41.4	13	4.0
VALLEY VIEW MEDICAL CENTER	162	66.1	51	85.0	86	76.1	23	37.7	48	3.3
WASATCH COUNTY HOSPITAL	41	78.8	16	76.2	53	72.6	7	43.8	14	2.7

*-Number of c-section deliveries with indication per 100 deliveries with the same indication

SOURCE: Utah Hospital Inpatient Discharge Database, 1992-97

Note: For interpreting differences between rates based on small numbers, please refer to Appendix C.

Table 18 (page 1 of 10):

**Counts and Rates of Hospitalizations for C-section by Indication, and Hospital
Inpatient Discharges from Utah Hospitals: 1992-1997**

Previous c-section

(1) HOSPITAL NAME	NUMBER OF DISCHARGES				RATES			
	with C.S. & indic.	with C.S.	with ind- ication	all del- iveries	% cesa- rean	contri- bution	%age cont- ribution	% indi- cation
ALLEN MEMORIAL HOSPITAL	11	49	12	240	91.7	4.6	22.4	5.0
ALTA VIEW HOSPITAL	682	1,481	1,049	9,273	65.0	7.4	46.0	11.3
AMERICAN FORK HOSPITAL	518	1,388	799	10,667	64.8	4.9	37.3	7.5
ASHLEY VALLEY MEDICAL CENTER	88	224	92	1,413	95.7	6.2	39.3	6.5
BEAR RIVER VALLEY HOSPITAL	28	61	31	366	90.3	7.7	45.9	8.5
BEAVER VALLEY HOSPITAL	23	99	28	413	82.1	5.6	23.2	6.8
BRIGHAM CITY COMMUNITY HOSPITAL	217	519	329	2,678	66.0	8.1	41.8	12.3
CASTLEVIEW HOSPITAL	98	313	134	2,261	73.1	4.3	31.3	5.9
CENTRAL VALLEY MEDICAL CENTER	29	77	29	347	100.0	8.4	37.7	8.4
COTTONWOOD HOSPITAL	1,352	3,344	2,156	17,869	62.7	7.6	40.4	12.1
DAVIS HOSPITAL & MEDICAL CENTER	581	1,622	897	8,483	64.8	6.8	35.8	10.6
DELTA COMMUNITY MEDICAL CENTER	36	115	65	596	55.4	6.0	31.3	10.9
DIXIE MEDICAL CENTER	500	1,324	744	7,242	67.2	6.9	37.8	10.3
UINTAH BASIN MEDICAL CENTER	215	598	268	2,163	80.2	9.9	36.0	12.4
FHP HOSPITAL	204	634	431	3,801	47.3	5.4	32.2	11.3
FILLMORE COMMUNITY MEDICAL CENTER	13	48	25	299	52.0	4.3	27.1	8.4
GARFIELD MEMORIAL HOSPITAL	25	75	34	270	73.5	9.3	33.3	12.6
GUNNISON VALLEY HOSPITAL	68	244	71	865	95.8	7.9	27.9	8.2
HCA ST. MARK'S HOSPITAL	940	3,044	1,431	14,305	65.7	6.6	30.9	10.0
JORDAN VALLEY HOSPITAL	259	652	538	5,569	48.1	4.7	39.7	9.7

(Continues)

Column (6)-Number of c-section deliveries with this indication per100 deliveries with this indication

Column (7)-Number of c-section deliveries with this indication per100 hospital deliveries

Column (8)-Number of c-section deliveries with this indication per 100 c-section deliveries

Column (9)-Number of deliveries with this indication per 100 hospital deliveries

Note: For interpreting differences between rates based on small numbers, please refer to Appendix C.

**Table 18 (page 2 of 10) Counts and Rates of Hospitalizations for C-section by Indication and Hospital
Inpatient Discharges from Utah Hospitals: 1992-1997**

Previous c-section

(1) HOSPITAL NAME	(2) with C.S. & indic.	(3) NUMBER OF DISCHARGES		(4) with ind- ication	(5) all del- iveries	(6) % cesa- rean	(7) RATES		
		with C.S.	with C.S.				contri- bution	%age cont- ribution	% indi- cation
KANE COUNTY HOSPITAL	11	39	14	189	78.6	5.8	28.2	7.4	
LAKEVIEW HOSPITAL	462	1,030	570	4,672	81.1	9.9	44.9	12.2	
LDH HOSPITAL	1,363	3,562	2,248	21,727	60.6	6.3	38.3	10.3	
LOGAN REGIONAL HOSPITAL	379	1,280	680	10,983	55.7	3.5	29.6	6.2	
MCKAY DEE HOSPITAL	938	2,619	1,614	14,907	58.1	6.3	35.8	10.8	
MILFORD VALLEY MEMORIAL HOSPITAL	0	9	0	63	.	0.0	0.0	0.0	
MONUMENT VALLEY ADVENTIST HOSPITAL	2	10	8	144	25.0	1.4	20.0	5.6	
MOUNTAIN VIEW HOSPITAL	408	1,017	546	7,379	74.7	5.5	40.1	7.4	
OGDEN REGIONAL MEDICAL CENTER	583	1,788	898	10,724	64.9	5.4	32.6	8.4	
OREM COMMUNITY HOSPITAL	278	772	455	5,006	61.1	5.6	36.0	9.1	
PIONEER VALLEY HOSPITAL	332	822	472	4,657	70.3	7.1	40.4	10.1	
SALT LAKE REGIONAL MEDICAL CENTER	532	1,576	927	10,685	57.4	5.0	33.8	8.7	
SAN JUAN HOSPITAL	40	90	57	656	70.2	6.1	44.4	8.7	
SANPETE VALLEY HOSPITAL	12	116	20	690	60.0	1.7	10.3	2.9	
SEVIER VALLEY HOSPITAL	78	254	86	1,205	90.7	6.5	30.7	7.1	
TOOELE VALLEY REGIONAL MEDICAL CEN	27	85	34	441	79.4	6.1	31.8	7.7	
UNIVERSITY OF UTAH HOSPITAL	594	2,465	1,142	13,657	52.0	4.3	24.1	8.4	
UTAH VALLEY MEDICAL CENTER	1,346	3,438	2,062	23,383	65.3	5.8	39.2	8.8	
VALLEY VIEW MEDICAL CENTER	162	370	245	1,935	66.1	8.4	43.8	12.7	
WASATCH COUNTY HOSPITAL	41	131	52	679	78.8	6.0	31.3	7.7	

(Continues)

SOURCE: Utah Hospital Inpatient Discharge Database, 1992-97, Utah Department of Health.

Column (6)-Number of c-section deliveries with this indication per100 deliveries with this indication

Column (7)-Number of c-section deliveries with this indication per100 hospital deliveries

Column (8)-Number of c-section deliveries with this indication per 100 c-section deliveries

Column (9)-Number of deliveries with this indication per 100 hospital deliveries

Note: For interpreting differences between rates based on small numbers, please refer to Appendix C.

Table 18 (page 3 of 10): Counts and Rates of Hospitalizations for C-section by Indication, and Hospital Inpatient Discharges from Utah Hospitals: 1992-1997

Breech presentation

(1) HOSPITAL NAME	NUMBER OF DISCHARGES				RATES			
	with C.S. & indic.	with C.S.	with ind- ication	all del- iveries	% cesa- rean	contri- bution	%age cont- ribution	% indi- cation
ALLEN MEMORIAL HOSPITAL	4	49	5	240	80.0	1.7	8.2	2.1
ALTA VIEW HOSPITAL	230	1,481	254	9,273	90.6	2.5	15.5	2.7
AMERICAN FORK HOSPITAL	218	1,388	256	10,667	85.2	2.0	15.7	2.4
ASHLEY VALLEY MEDICAL CENTER	37	224	39	1,413	94.9	2.6	16.5	2.8
BEAR RIVER VALLEY HOSPITAL	5	61	6	366	83.3	1.4	8.2	1.6
BEAVER VALLEY HOSPITAL	9	99	9	413	100.0	2.2	9.1	2.2
BRIGHAM CITY COMMUNITY HOSPITAL	46	519	55	2,678	83.6	1.7	8.9	2.1
CASTLEVIEW HOSPITAL	58	313	67	2,261	86.6	2.6	18.5	3.0
CENTRAL VALLEY MEDICAL CENTER	8	77	8	347	100.0	2.3	10.4	2.3
COTTONWOOD HOSPITAL	430	3,344	452	17,869	95.1	2.4	12.9	2.5
DAVIS HOSPITAL & MEDICAL CENTER	224	1,622	235	8,483	95.3	2.6	13.8	2.8
DELTA COMMUNITY MEDICAL CENTER	13	115	14	596	92.9	2.2	11.3	2.3
DIXIE MEDICAL CENTER	188	1,324	205	7,242	91.7	2.6	14.2	2.8
UINTAH BASIN MEDICAL CENTER	46	598	51	2,163	90.2	2.1	7.7	2.4
FHP HOSPITAL	96	634	107	3,801	89.7	2.5	15.1	2.8
FILLMORE COMMUNITY MEDICAL CENTER	6	48	6	299	100.0	2.0	12.5	2.0
GARFIELD MEMORIAL HOSPITAL	12	75	13	270	92.3	4.4	16.0	4.8
GUNNISON VALLEY HOSPITAL	24	244	26	865	92.3	2.8	9.8	3.0
HCA ST. MARK'S HOSPITAL	361	3,044	382	14,305	94.5	2.5	11.9	2.7
JORDAN VALLEY HOSPITAL	98	652	113	5,569	86.7	1.8	15.0	2.0

(Continues)

Column (6)-Number of c-section deliveries with this indication per100 deliveries with this indication

Column (7)-Number of c-section deliveries with this indication per100 hospital deliveries

Column (8)-Number of c-section deliveries with this indication per 100 c-section deliveries

Column (9)-Number of deliveries with this indication per 100 hospital deliveries

Note: For interpreting differences between rates based on small numbers, please refer to Appendix C.

Table 18 (page 4 of 10): Counts and Rates of Hospitalizations for C-section by Indication, and Hospital Inpatient Discharges from Utah Hospitals: 1992-1997

Breech Presentation

(1) HOSPITAL NAME	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
	NUMBER OF DISCHARGES				RATES			
	with C.S. & indic.	with C.S.	with ind- ication	all del- iveries	% cesa- rean	contri- bution	%age cont- ribution	% indi- cation
KANE COUNTY HOSPITAL	4	39	4	189	100.0	2.1	10.3	2.1
LAKEVIEW HOSPITAL	131	1,030	136	4,672	96.3	2.8	12.7	2.9
LDS HOSPITAL	537	3,562	601	21,727	89.4	2.5	15.1	2.8
LOGAN REGIONAL HOSPITAL	259	1,280	279	10,983	92.8	2.4	20.2	2.5
MCKAY DEE HOSPITAL	447	2,619	480	14,907	93.1	3.0	17.1	3.2
MILFORD VALLEY MEMORIAL HOSPITAL	1	9	3	63	33.3	1.6	11.1	4.8
MONUMENT VALLEY ADVENTIST HOSPITAL	3	10	4	144	75.0	2.1	30.0	2.8
MOUNTAIN VIEW HOSPITAL	181	1,017	192	7,379	94.3	2.5	17.8	2.6
OGDEN REGIONAL MEDICAL CENTER	267	1,788	287	10,724	93.0	2.5	14.9	2.7
OREM COMMUNITY HOSPITAL	105	772	109	5,006	96.3	2.1	13.6	2.2
PIONEER VALLEY HOSPITAL	103	822	113	4,657	91.2	2.2	12.5	2.4
SALT LAKE REGIONAL MEDICAL CENTER	201	1,576	220	10,685	91.4	1.9	12.8	2.1
SAN JUAN HOSPITAL	10	90	10	656	100.0	1.5	11.1	1.5
SANPETE VALLEY HOSPITAL	18	116	20	690	90.0	2.6	15.5	2.9
SEVIER VALLEY HOSPITAL	37	254	40	1,205	92.5	3.1	14.6	3.3
TOOELE VALLEY REGIONAL MEDICAL CEN	10	85	10	441	100.0	2.3	11.8	2.3
UNIVERSITY OF UTAH HOSPITAL	465	2,465	608	13,657	76.5	3.4	18.9	4.5
UTAH VALLEY MEDICAL CENTER	621	3,438	692	23,383	89.7	2.7	18.1	3.0
VALLEY VIEW MEDICAL CENTER	51	370	60	1,935	85.0	2.6	13.8	3.1
WASATCH COUNTY HOSPITAL	16	131	21	679	76.2	2.4	12.2	3.1

(continues)

SOURCE: Utah Hospital Inpatient Discharge Database, 1992-97, Utah Department of Health.

Column (6)-Number of c-section deliveries with this indication per 100 deliveries with this indication

Column (7)-Number of c-section deliveries with this indication per 100 hospital deliveries

Column (8)-Number of c-section deliveries with this indication per 100 c-section deliveries

Column (9)-Number of deliveries with this indication per 100 hospital deliveries

Note: For interpreting differences between rates based on small numbers, please refer to Appendix C.

Table 18 (page 5 of 10): Counts and Rates of Hospitalizations for C-section by Indication, and Hospital Inpatient Discharges from Utah Hospitals: 1992-1997

Dystocia

(1) HOSPITAL NAME	NUMBER OF DISCHARGES				RATES			
	with C.S. & indic.	with C.S.	with ind- ication	all del- iveries	% cesa- rean	contri- bution	%age cont- ribution	% indi- cation
ALLEN MEMORIAL HOSPITAL	22	49	35	240	62.9	9.2	44.9	14.6
ALTA VIEW HOSPITAL	400	1,481	763	9,273	52.4	4.3	27.0	8.2
AMERICAN FORK HOSPITAL	475	1,388	676	10,667	70.3	4.5	34.2	6.3
ASHLEY VALLEY MEDICAL CENTER	63	224	143	1,413	44.1	4.5	28.1	10.1
BEAR RIVER VALLEY HOSPITAL	16	61	22	366	72.7	4.4	26.2	6.0
BEAVER VALLEY HOSPITAL	46	99	48	413	95.8	11.1	46.5	11.6
BRIGHAM CITY COMMUNITY HOSPITAL	197	519	230	2,678	85.7	7.4	38.0	8.6
CASTLEVIEW HOSPITAL	82	313	215	2,261	38.1	3.6	26.2	9.5
CENTRAL VALLEY MEDICAL CENTER	23	77	39	347	59.0	6.6	29.9	11.2
COTTONWOOD HOSPITAL	1,139	3,344	1,636	17,869	69.6	6.4	34.1	9.2
DAVIS HOSPITAL & MEDICAL CENTER	523	1,622	708	8,483	73.9	6.2	32.2	8.3
DELTA COMMUNITY MEDICAL CENTER	34	115	78	596	43.6	5.7	29.6	13.1
DIXIE MEDICAL CENTER	432	1,324	554	7,242	78.0	6.0	32.6	7.6
UINTAH BASIN MEDICAL CENTER	224	598	676	2,163	33.1	10.4	37.5	31.3
FHP HOSPITAL	187	634	386	3,801	48.4	4.9	29.5	10.2
FILLMORE COMMUNITY MEDICAL CENTER	8	48	17	299	47.1	2.7	16.7	5.7
GARFIELD MEMORIAL HOSPITAL	25	75	39	270	64.1	9.3	33.3	14.4
GUNNISON VALLEY HOSPITAL	107	244	149	865	71.8	12.4	43.9	17.2
HCA ST. MARK'S HOSPITAL	1,174	3,044	2,795	14,305	42.0	8.2	38.6	19.5
JORDAN VALLEY HOSPITAL	199	652	545	5,569	36.5	3.6	30.5	9.8

(Continues)

Column (6)-Number of c-section deliveries with this indication per 100 deliveries with this indication

Column (7)-Number of c-section deliveries with this indication per 100 hospital deliveries

Column (8)-Number of c-section deliveries with this indication per 100 c-section deliveries

Column (9)-Number of deliveries with this indication per 100 hospital deliveries

Note: For interpreting differences between rates based on small numbers, please refer to Appendix C.

Table 18 (page 6 of 10): Counts and Rates of Hospitalizations for C-section by Indication, and Hospital Inpatient Discharges from Utah Hospitals: 1992-1997

Dystocia

(1) HOSPITAL NAME	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
	with C.S. & indic.	NUMBER OF DISCHARGES with C.S.	with ind- ication	all del- iveries	% cesa- rean	contri- bution	%age cont- ribution	% indi- cation
KANE COUNTY HOSPITAL	17	39	32	189	53.1	9.0	43.6	16.9
LAKEVIEW HOSPITAL	266	1,030	350	4,672	76.0	5.7	25.8	7.5
LDH HOSPITAL	920	3,562	2,147	21,727	42.9	4.2	25.8	9.9
LOGAN REGIONAL HOSPITAL	453	1,280	893	10,983	50.7	4.1	35.4	8.1
MCKAY DEE HOSPITAL	758	2,619	1,610	14,907	47.1	5.1	28.9	10.8
MILFORD VALLEY MEMORIAL HOSPITAL	2	9	2	63	100.0	3.2	22.2	3.2
MONUMENT VALLEY ADVENTIST HOSPITAL	2	10	19	144	10.5	1.4	20.0	13.2
MOUNTAIN VIEW HOSPITAL	214	1,017	369	7,379	58.0	2.9	21.0	5.0
OGDEN REGIONAL MEDICAL CENTER	556	1,788	1,056	10,724	52.7	5.2	31.1	9.8
OREM COMMUNITY HOSPITAL	248	772	563	5,006	44.0	5.0	32.1	11.2
PIONEER VALLEY HOSPITAL	255	822	358	4,657	71.2	5.5	31.0	7.7
SALT LAKE REGIONAL MEDICAL CENTER	502	1,576	910	10,685	55.2	4.7	31.9	8.5
SAN JUAN HOSPITAL	24	90	54	656	44.4	3.7	26.7	8.2
SANPETE VALLEY HOSPITAL	34	116	75	690	45.3	4.9	29.3	10.9
SEVIER VALLEY HOSPITAL	102	254	187	1,205	54.5	8.5	40.2	15.5
TOOELE VALLEY REGIONAL MEDICAL CEN	23	85	39	441	59.0	5.2	27.1	8.8
UNIVERSITY OF UTAH HOSPITAL	705	2,465	1,426	13,657	49.4	5.2	28.6	10.4
UTAH VALLEY MEDICAL CENTER	706	3,438	2,717	23,383	26.0	3.0	20.5	11.6
VALLEY VIEW MEDICAL CENTER	86	370	113	1,935	76.1	4.4	23.2	5.8
WASATCH COUNTY HOSPITAL	53	131	73	679	72.6	7.8	40.5	10.8

(Continues)

SOURCE: Utah Hospital Inpatient Discharge Database, 1992-97, Utah Department of Health.

Column (6)-Number of c-section deliveries with this indication per 100 deliveries with this indication

Column (7)-Number of c-section deliveries with this indication per 100 hospital deliveries

Column (8)-Number of c-section deliveries with this indication per 100 c-section deliveries

Column (9)-Number of deliveries with this indication per 100 hospital deliveries

Note: For interpreting differences between rates based on small numbers, please refer to Appendix C.

Table 18 (page 7 of 10): Counts and Rates of Hospitalizations for C-section by Indication, and Hospital Inpatient Discharges from Utah Hospitals: 1992-1997

Fetal Distress

(1) HOSPITAL NAME	NUMBER OF DISCHARGES				RATES			
	with C.S. & indic.	with C.S.	with ind- ication	all del- iveries	% cesa- rean	contri- bution	%age cont- ribution	% indi- cation
ALLEN MEMORIAL HOSPITAL	7	49	15	240	46.7	2.9	14.3	6.3
ALTA VIEW HOSPITAL	68	1,481	470	9,273	14.5	0.7	4.6	5.1
AMERICAN FORK HOSPITAL	92	1,388	157	10,667	58.6	0.9	6.6	1.5
ASHLEY VALLEY MEDICAL CENTER	18	224	81	1,413	22.2	1.3	8.0	5.7
BEAR RIVER VALLEY HOSPITAL	2	61	21	366	9.5	0.5	3.3	5.7
BEAVER VALLEY HOSPITAL	9	99	18	413	50.0	2.2	9.1	4.4
BRIGHAM CITY COMMUNITY HOSPITAL	30	519	117	2,678	25.6	1.1	5.8	4.4
CASTLEVIEW HOSPITAL	42	313	178	2,261	23.6	1.9	13.4	7.9
CENTRAL VALLEY MEDICAL CENTER	3	77	9	347	33.3	0.9	3.9	2.6
COTTONWOOD HOSPITAL	177	3,344	892	17,869	19.8	1.0	5.3	5.0
DAVIS HOSPITAL & MEDICAL CENTER	123	1,622	565	8,483	21.8	1.4	7.6	6.7
DELTA COMMUNITY MEDICAL CENTER	10	115	70	596	14.3	1.7	8.7	11.7
DIXIE MEDICAL CENTER	107	1,324	659	7,242	16.2	1.5	8.1	9.1
UINTAH BASIN MEDICAL CENTER	83	598	271	2,163	30.6	3.8	13.9	12.5
FHP HOSPITAL	78	634	606	3,801	12.9	2.1	12.3	15.9
FILLMORE COMMUNITY MEDICAL CENTER	3	48	12	299	25.0	1.0	6.3	4.0
GARFIELD MEMORIAL HOSPITAL	5	75	29	270	17.2	1.9	6.7	10.7
GUNNISON VALLEY HOSPITAL	27	244	46	865	58.7	3.1	11.1	5.3
HCA ST. MARK'S HOSPITAL	279	3,044	737	14,305	37.9	2.0	9.2	5.2
JORDAN VALLEY HOSPITAL	31	652	347	5,569	8.9	0.6	4.8	6.2

(Continued)

Column (6)-Number of c-section deliveries with this indication per 100 deliveries with this indication

Column (7)-Number of c-section deliveries with this indication per 100 hospital deliveries

Column (8)-Number of c-section deliveries with this indication per 100 c-section deliveries

Column (9)-Number of deliveries with this indication per 100 hospital deliveries

Note: For interpreting differences between rates based on small numbers, please refer to Appendix C.

Table 18 (page 8 of 10) Counts and Rates of Hospitalizations for C-section by Indication, and Hospital Inpatient Discharges from Utah Hospitals: 1992-1997

Fetal Distress

(1) HOSPITAL NAME	NUMBER OF DISCHARGES				RATES			
	with C.S. & indic.	with C.S.	with ind- ication	all del- iveries	% cesa- rean	contri- bution	%age cont- ribution	% indi- cation
KANE COUNTY HOSPITAL	0	39	2	189	0.0	0.0	0.0	1.1
LAKEVIEW HOSPITAL	37	1,030	67	4,672	55.2	0.8	3.6	1.4
LDS HOSPITAL	303	3,562	1,147	21,727	26.4	1.4	8.5	5.3
LOGAN REGIONAL HOSPITAL	92	1,280	1,369	10,983	6.7	0.8	7.2	12.5
MCKAY DEE HOSPITAL	150	2,619	379	14,907	39.6	1.0	5.7	2.5
MILFORD VALLEY MEMORIAL HOSPITAL	0	9	0	63	.	0.0	0.0	0.0
MONUMENT VALLEY ADVENTIST HOSPITAL	2	10	6	144	33.3	1.4	20.0	4.2
MOUNTAIN VIEW HOSPITAL	73	1,017	159	7,379	45.9	1.0	7.2	2.2
OGDEN REGIONAL MEDICAL CENTER	137	1,788	301	10,724	45.5	1.3	7.7	2.8
OREM COMMUNITY HOSPITAL	75	772	283	5,006	26.5	1.5	9.7	5.7
PIONEER VALLEY HOSPITAL	60	822	171	4,657	35.1	1.3	7.3	3.7
SALT LAKE REGIONAL MEDICAL CENTER	167	1,576	902	10,685	18.5	1.6	10.6	8.4
SAN JUAN HOSPITAL	7	90	23	656	30.4	1.1	7.8	3.5
SANPETE VALLEY HOSPITAL	19	116	34	690	55.9	2.8	16.4	4.9
SEVIER VALLEY HOSPITAL	19	254	156	1,205	12.2	1.6	7.5	12.9
TOOELE VALLEY REGIONAL MEDICAL CEN	12	85	29	441	41.4	2.7	14.1	6.6
UNIVERSITY OF UTAH HOSPITAL	253	2,465	1,104	13,657	22.9	1.9	10.3	8.1
UTAH VALLEY MEDICAL CENTER	213	3,438	286	23,383	74.5	0.9	6.2	1.2
VALLEY VIEW MEDICAL CENTER	23	370	61	1,935	37.7	1.2	6.2	3.2
WASATCH COUNTY HOSPITAL	7	131	16	679	43.8	1.0	5.3	2.4

(continues)

SOURCE: Utah Hospital Inpatient Discharge Database, 1992-97, Utah Department of Health.

Column (6)-Number of c-section deliveries with this indication per 100 deliveries with this indication

Column (7)-Number of c-section deliveries with this indication per 100 hospital deliveries

Column (8)-Number of c-section deliveries with this indication per 100 c-section deliveries

Column (9)-Number of deliveries with this indication per 100 hospital deliveries

Note: For interpreting differences between rates based on small numbers, please refer to Appendix C.

Table 18 (page 9 of 10):

**Counts and Rates of Hospitalizations for C-section by Indication, and Hospital
Inpatient Discharges from Utah Hospitals: 1992-1997**

Other

(1) HOSPITAL NAME	NUMBER OF DISCHARGES				RATES			
	(2) with C.S. & indic.	(3) with C.S.	(4) with ind- ication	(5) all del- iveries	(6) % cesa- rean	(7) contri- bution	(8) %age cont- ribution	(9) % indi- cation
ALLEN MEMORIAL HOSPITAL	5	49	173	240	2.9	2.1	10.2	72.1
ALTA VIEW HOSPITAL	101	1,481	6,737	9,273	1.5	1.1	6.8	72.7
AMERICAN FORK HOSPITAL	85	1,388	8,779	10,667	1.0	0.8	6.1	82.3
ASHLEY VALLEY MEDICAL CENTER	18	224	1,058	1,413	1.7	1.3	8.0	74.9
BEAR RIVER VALLEY HOSPITAL	10	61	286	366	3.5	2.7	16.4	78.1
BEAVER VALLEY HOSPITAL	12	99	310	413	3.9	2.9	12.1	75.1
BRIGHAM CITY COMMUNITY HOSPITAL	29	519	1,947	2,678	1.5	1.1	5.6	72.7
CASTLEVIEW HOSPITAL	33	313	1,667	2,261	2.0	1.5	10.5	73.7
CENTRAL VALLEY MEDICAL CENTER	14	77	262	347	5.3	4.0	18.2	75.5
COTTONWOOD HOSPITAL	246	3,344	12,733	17,869	1.9	1.4	7.4	71.3
DAVIS HOSPITAL & MEDICAL CENTER	171	1,622	6,078	8,483	2.8	2.0	10.5	71.6
DELTA COMMUNITY MEDICAL CENTER	22	115	369	596	6.0	3.7	19.1	61.9
DIXIE MEDICAL CENTER	97	1,324	5,080	7,242	1.9	1.3	7.3	70.1
UINTAH BASIN MEDICAL CENTER	30	598	897	2,163	3.3	1.4	5.0	41.5
FHP HOSPITAL	69	634	2,271	3,801	3.0	1.8	10.9	59.7
FILLMORE COMMUNITY MEDICAL CENTER	18	48	239	299	7.5	6.0	37.5	79.9
GARFIELD MEMORIAL HOSPITAL	8	75	155	270	5.2	3.0	10.7	57.4
GUNNISON VALLEY HOSPITAL	18	244	573	865	3.1	2.1	7.4	66.2
HCA ST. MARK'S HOSPITAL	290	3,044	8,960	14,305	3.2	2.0	9.5	62.6
JORDAN VALLEY HOSPITAL	65	652	4,026	5,569	1.6	1.2	10.0	72.3

(Continues)

Column (6)-Number of c-section deliveries with this indication per 100 deliveries with this indication

Column (7)-Number of c-section deliveries with this indication per 100 hospital deliveries

Column (8)-Number of c-section deliveries with this indication per 100 c-section deliveries

Column (9)-Number of deliveries with this indication per 100 hospital deliveries

Note: For interpreting differences between rates based on small numbers, please refer to Appendix C.

**Table 19 (page 1 of 2): Total Number and Rates of Overall C-section Deliveries (Per 100 Hospital Deliveries)
Utah's 61 Small Areas, Inpatient Discharges: 1992-97**

AREA OF RESIDENCE	NUMBER OF DELIVERIES		CESAREAN RATE /100 DELIVERIES		
	C-Section	All Deliveries	Rate	Upper CL	Lower CL
State Total	37,126	221,484	16.8	16.6	16.9
Brigham City	389	1,983	19.6	17.7	21.6
Other Box Elder Co.	362	2,004	18.1	16.2	19.9
Logan	895	7,465	12.0	11.2	12.8
Other Cache/Rich Co.	437	3,530	12.4	11.2	13.5
Ben Lomond	772	4,290	18.0	16.7	19.3
Morgan/East Weber Co.	353	2,336	15.1	13.5	16.7
Downtown Ogden	762	4,013	19.0	17.6	20.3
South Ogden	615	3,677	16.7	15.4	18.0
Roy/Hooper	614	3,685	16.7	15.3	18.0
Riverdale	423	2,436	17.4	15.7	19.0
Clearfield/Hill AFB	953	4,883	19.5	18.3	20.8
Layton	1,169	6,243	18.7	17.7	19.8
Syracuse/Kaysville	482	3,048	15.8	14.4	17.2
Farmington/Centerville	448	2,477	18.1	16.4	19.8
Woods Cross/No SL	359	1,855	19.4	17.4	21.4
Bountiful	848	4,545	18.7	17.4	19.9
Rose Park	578	3,465	16.7	15.3	18.0
Avenues	325	2,094	15.5	13.8	17.2
Foothill/U of U	365	2,433	15.0	13.5	16.5
Magna	414	2,409	17.2	15.5	18.8
Glendale	517	3,168	16.3	14.9	17.7
West Valley I	1,252	6,804	18.4	17.4	19.4
West Valley II	906	5,096	17.8	16.6	18.9
Downtown Salt Lake	935	5,550	16.8	15.8	17.9
Soouth Salt Lake	579	3,279	17.7	16.2	19.1
Millcreek	1,037	5,957	17.4	16.3	18.5
Holladay	718	4,154	17.3	16.0	18.5
Cottonwood	591	3,354	17.6	16.2	19.0
Kearns	1,241	6,915	17.9	16.9	18.9
Taylorsville	645	3,623	17.8	16.4	19.2
Murray	599	3,408	17.6	16.2	19.0
Midvale	598	3,509	17.0	15.7	18.4

(Continues)

Note: For interpreting differences between rates based on small numbers, please refer to Appendix C.

**Table 19 (page 2 of 2): Total Number and Rates of Overall C-section Deliveries (Per 100 Hospital Deliveries)
Utah's 61 Small Areas, Inpatient Discharges: 1992-97**

AREA OF RESIDENCE	NUMBER OF DELIVERIES		CESAREAN RATE /100 DELIVERIES		
	C-Section	All Deliveries	Rate	Upper CL	Lower CL
West Jordan No.	915	5,259	17.4	16.3	18.5
W. Jordan, Copperton	565	3,323	17.0	15.6	18.4
South Jordan	161	1,145	14.1	11.9	16.2
Sandy Center	1,019	5,536	18.4	17.3	19.5
Sandy, NE	330	1,951	16.9	15.1	18.7
Sandy, SE	404	2,518	16.0	14.5	17.6
Riverton/Draper	686	4,328	15.9	14.7	17.0
Tooele Co.	500	2,908	17.2	15.7	18.7
Lehi/Cedar Valley	332	2,072	16.0	14.3	17.7
American Fork/Alpine	556	3,861	14.4	13.2	15.6
Pleasant Grove/Lindon	479	3,452	13.9	12.6	15.1
North Orem	1,006	6,657	15.1	14.2	16.0
West Orem	712	5,082	14.0	13.0	15.0
East Orem	36	276	13.0	8.8	17.3
Provo/BYU	709	5,436	13.0	12.1	14.0
Provo South	1,288	9,930	13.0	12.3	13.7
Springville/Spanish Fork	892	6,020	14.8	13.8	15.8
Utah Co. South	347	2,529	13.7	12.3	15.2
Summit Co.	362	1,964	18.4	16.5	20.3
Wasatch Co.	232	1,209	19.2	16.7	21.7
Tri-county LHD	880	3,818	23.0	21.5	24.6
Juab/Millard/Sanpete Co.	503	2,426	20.7	18.9	22.5
Sevier/Piute/Wayne Co.	455	1,884	24.2	21.9	26.4
Carbon/Emery Co.	413	2,744	15.1	13.6	16.5
Grand/San Juan Co.	195	1,180	16.5	14.2	18.8
St. George	751	4,177	18.0	16.7	19.3
Other Washington Co.	477	2,619	18.2	16.6	19.8
Cedar City	329	1,748	18.8	16.8	20.9
Other Southwest Dist	411	1,744	23.6	21.3	25.8

SOURCE: Utah Hospital Inpatient Discharge Database, 1992-97, Utah Department of Health.

Note: Small Areas are Defined by Patients' Residential Zip Codes.

The last two columns of the table show a 95% confidence interval for the rates.

Note: For interpreting differences between rates based on small numbers, please refer to Appendix C.

**Table 20 (page 1 of 2): Total Number and Rates of Primary C-section Deliveries (Per 100 Hospital Deliveries)
Utah's 61 Small Areas, Inpatient Discharges: 1992-97**

AREA OF RESIDENCE	NUMBER OF DELIVERIES		CESAREAN RATE /100 DELIVERIES		
	C-Section	All Deliveries	Rate	Upper CL	Lower CL
State Total	22,135	221,484	10.0	9.9	10.1
Brigham City	207	1,983	10.4	9.0	11.9
Other Box Elder Co.	178	2,004	8.9	7.6	10.2
Logan	607	7,465	8.1	7.5	8.8
Other Cache/Rich Co.	250	3,530	7.1	6.2	8.0
Ben Lomond	481	4,290	11.2	10.2	12.2
Morgan/East Weber Co.	198	2,336	8.5	7.3	9.7
Downtown Ogden	479	4,013	11.9	10.9	13.0
South Ogden	384	3,677	10.4	9.4	11.5
Roy/Hooper	379	3,685	10.3	9.2	11.3
Riverdale	280	2,436	11.5	10.1	12.8
Clearfield/Hill AFB	560	4,883	11.5	10.5	12.4
Layton	696	6,243	11.1	10.3	12.0
Syracuse/Kaysville	258	3,048	8.5	7.4	9.5
Farmington/Centerville	226	2,477	9.1	7.9	10.3
Woods Cross/No SL	204	1,855	11.0	9.5	12.5
Bountiful	484	4,545	10.6	9.7	11.6
Rose Park	343	3,465	9.9	8.9	10.9
Avenues	247	2,094	11.8	10.3	13.3
Foothill/U of U	234	2,433	9.6	8.4	10.9
Magna	258	2,409	10.7	9.4	12.0
Glendale	331	3,168	10.4	9.3	11.6
West Valley I	699	6,804	10.3	9.5	11.0
West Valley II	542	5,096	10.6	9.7	11.5
Downtown Salt Lake	655	5,550	11.8	10.9	12.7
Soouth Salt Lake	371	3,279	11.3	10.2	12.5
Millcreek	658	5,957	11.0	10.2	11.9
Holladay	475	4,154	11.4	10.4	12.5
Cottonwood	354	3,354	10.6	9.5	11.7
Kearns	737	6,915	10.7	9.9	11.4
Taylorsville	411	3,623	11.3	10.2	12.4
Murray	379	3,408	11.1	10.0	12.2
Midvale	380	3,509	10.8	9.7	11.9

Note: For interpreting differences between rates based on small numbers, please refer to Appendix C.

**Table 20 (page 2 of 2): Total Number and Rates of Primary C-section Deliveries (Per 100 Hospital Deliveries)
Utah's 61 Small Areas, Inpatient Discharges: 1992-97**

AREA OF RESIDENCE	NUMBER OF DELIVERIES		CESAREAN RATE /100 DELIVERIES		
	C-Section	All Deliveries	Rate	Upper CL	Lower CL
West Jordan No.	486	5,259	9.2	8.4	10.1
W. Jordan, Copperton	308	3,323	9.3	8.2	10.3
South Jordan	75	1,145	6.6	5.1	8.0
Sandy Center	536	5,536	9.7	8.9	10.5
Sandy, NE	165	1,951	8.5	7.2	9.7
Sandy, SE	201	2,518	8.0	6.9	9.1
Riverton/Draper	322	4,328	7.4	6.6	8.3
Tooele Co.	280	2,908	9.6	8.5	10.8
Lehi/Cedar Valley	175	2,072	8.4	7.2	9.7
American Fork/Alpine	292	3,861	7.6	6.7	8.4
Pleasant Grove/Lindon	254	3,452	7.4	6.5	8.3
North Orem	544	6,657	8.2	7.5	8.9
West Orem	426	5,082	8.4	7.6	9.2
East Orem	24	276	8.7	5.2	12.2
Provo/BYU	501	5,436	9.2	8.4	10.0
Provo South	845	9,930	8.5	7.9	9.1
Springville/Spanish Fork	514	6,020	8.5	7.8	9.3
Utah Co. South	185	2,529	7.3	6.3	8.4
Summit Co.	221	1,964	11.3	9.8	12.7
Wasatch Co.	138	1,209	11.4	9.5	13.3
Tri-county LHD	528	3,818	13.8	12.6	15.0
Juab/Millard/Sanpete Co.	321	2,426	13.2	11.8	14.7
Sevier/Piute/Wayne Co.	295	1,884	15.7	13.9	17.4
Carbon/Emery Co.	251	2,744	9.1	8.0	10.3
Grand/San Juan Co.	123	1,180	10.4	8.6	12.3
St. George	461	4,177	11.0	10.0	12.0
Other Washington Co.	268	2,619	10.2	9.0	11.5
Cedar City	194	1,748	11.1	9.5	12.7
Other Southwest Dist	257	1,744	14.7	12.9	16.5

SOURCE: Utah Hospital Inpatient Discharge Database, 1992-97, Utah Department of Health.

Note: Small Areas are Defined by Patients' Residential Zip Codes.

The last two columns of the table show a 95% confidence interval for the rates.

Note: For interpreting differences between rates based on small numbers, please refer to Appendix C.

**Table 21 (page 1 of 2): Total Number and Rates of Repeat C-section Deliveries (Per 100 Hospital Deliveries)
Utah's 61 Small Areas, Inpatient Discharges: 1992-97**

AREA OF RESIDENCE	NUMBER OF DELIVERIES		CESAREAN RATE /100 DELIVERIES		
	C-Section	All Deliveries	Rate	Upper CL	Lower CL
State Total	14,991	221,484	6.8	6.7	6.9
Brigham City	182	1,983	9.2	7.8	10.5
Other Box Elder Co.	184	2,004	9.2	7.9	10.5
Logan	288	7,465	3.9	3.4	4.3
Other Cache/Rich Co.	187	3,530	5.3	4.5	6.1
Ben Lomond	291	4,290	6.8	6.0	7.6
Morgan/East Weber Co.	155	2,336	6.6	5.6	7.7
Downtown Ogden	283	4,013	7.1	6.2	7.9
South Ogden	231	3,677	6.3	5.5	7.1
Roy/Hooper	235	3,685	6.4	5.6	7.2
Riverdale	143	2,436	5.9	4.9	6.8
Clearfield/Hill AFB	393	4,883	8.0	7.3	8.8
Layton	473	6,243	7.6	6.9	8.3
Syracuse/Kaysville	224	3,048	7.3	6.4	8.3
Farmington/Centerville	222	2,477	9.0	7.8	10.1
Woods Cross/No SL	155	1,855	8.4	7.0	9.7
Bountiful	364	4,545	8.0	7.2	8.8
Rose Park	235	3,465	6.8	5.9	7.6
Avenues	78	2,094	3.7	2.9	4.6
Foothill/U of U	131	2,433	5.4	4.5	6.3
Magna	156	2,409	6.5	5.5	7.5
Glendale	186	3,168	5.9	5.0	6.7
West Valley I	553	6,804	8.1	7.5	8.8
West Valley II	364	5,096	7.1	6.4	7.9
Downtown Salt Lake	280	5,550	5.0	4.5	5.6
Soouth Salt Lake	208	3,279	6.3	5.5	7.2
Millcreek	379	5,957	6.4	5.7	7.0
Holladay	243	4,154	5.8	5.1	6.6
Cottonwood	237	3,354	7.1	6.2	8.0
Kearns	504	6,915	7.3	6.7	7.9
Taylorsville	234	3,623	6.5	5.6	7.3
Murray	220	3,408	6.5	5.6	7.3
Midvale	218	3,509	6.2	5.4	7.0
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Note: For interpreting differences between rates based on small numbers, please refer to Appendix C.

**Table 21 (page 2 of 2): Total Number and Rates of Repeat C-section Deliveries (Per 100 Hospital Deliveries)
Utah's 61 Small Areas, Inpatient Discharges: 1992-97**

AREA OF RESIDENCE	NUMBER OF DELIVERIES		CESAREAN RATE /100 DELIVERIES		
	C-Section	All Deliveries	Rate	Upper CL	Lower CL
West Jordan No.	429	5,259	8.2	7.4	8.9
W. Jordan, Copperton	257	3,323	7.7	6.8	8.7
South Jordan	86	1,145	7.5	5.9	9.1
Sandy Center	483	5,536	8.7	7.9	9.5
Sandy, NE	165	1,951	8.5	7.2	9.7
Sandy, SE	203	2,518	8.1	7.0	9.2
Riverton/Draper	364	4,328	8.4	7.5	9.3
Tooele Co.	220	2,908	7.6	6.6	8.6
Lehi/Cedar Valley	157	2,072	7.6	6.4	8.8
American Fork/Alpine	264	3,861	6.8	6.0	7.7
Pleasant Grove/Lindon	225	3,452	6.5	5.7	7.4
North Orem	462	6,657	6.9	6.3	7.6
West Orem	286	5,082	5.6	5.0	6.3
East Orem	12	276	4.3	1.9	6.8
Provo/BYU	208	5,436	3.8	3.3	4.3
Provo South	443	9,930	4.5	4.0	4.9
Springville/Spanish Fork	378	6,020	6.3	5.6	6.9
Utah Co. South	162	2,529	6.4	5.4	7.4
Summit Co.	141	1,964	7.2	6.0	8.4
Wasatch Co.	94	1,209	7.8	6.2	9.3
Tri-county LHD	352	3,818	9.2	8.3	10.2
Juab/Millard/Sanpete Co.	182	2,426	7.5	6.4	8.6
Sevier/Piute/Wayne Co.	160	1,884	8.5	7.2	9.8
Carbon/Emery Co.	162	2,744	5.9	5.0	6.8
Grand/San Juan Co.	72	1,180	6.1	4.7	7.5
St. George	290	4,177	6.9	6.1	7.7
Other Washington Co.	209	2,619	8.0	6.9	9.1
Cedar City	135	1,748	7.7	6.4	9.0
Other Southwest Dist	154	1,744	8.8	7.4	10.2

SOURCE: Utah Hospital Inpatient Discharge Database, 1992-97, Utah Department of Health.

Note: Small Areas are Defined by Patients' Residential Zip Codes.

The last two columns of the table show a 95% confidence interval for the rates.

Note: For interpreting differences between rates based on small numbers, please refer to Appendix C.

APPENDIX C: Interpreting Rates based on Small Numbers

Some of the cesarean section rates included in this report are based on a small number of events (cesarean sections). In statistical terms, rates based on small numbers of events are unstable. In common language, that means the rates based on smaller numbers of events will vary from place to place or from one time period to another based on chance alone, even if nothing else changes. That means that a difference between two rates in different hospitals or between rates in one hospital in two different years may have occurred due to chance variation and not due to real differences between the two hospitals or between the two years.

Statisticians use confidence limits to determine how much variation can be expected to occur due to chance alone. When a difference between two rates is large relative to those confidence limits, it is likely that the difference was not due to chance alone. That is, that difference probably was due to real differences in the patients being seen, the practices used to treat them, or both. It is important to remember that a difference between two rates that is small relative to the confidence limits may also be due to real differences. It is just more likely that such a difference could have occurred from chance variation alone. Similarly, a difference between two rates that is large relative to the confidence limits for the rates may have been due to chance; it is just not as likely.

We have provided confidence limits for some of the rates included in this report. In other cases, providing such confidence limits would have made the tables very complicated and difficult to use. In those cases, the user can calculate an approximate confidence limit to assist with interpretation of a rate using the table below.

Number of events (e.g., cesarean sections)	Approximate confidence limits
2	$\pm 260\%$ of the rate
5	$\pm 130\%$ of the rate
10	$\pm 80\%$ of the rate
20	$\pm 50\%$ of the rate
50	$\pm 30\%$ of the rate
100	$\pm 20\%$ of the rate
200	$\pm 14\%$ of the rate
500	$\pm 9\%$ of the rate

For example, in Table 12 on page 38, Allen Memorial Hospital has an overall cesarean section rate of 20.4, based on 49 cesarean sections over the 6-year period. Using the table above, the approximate confidence limits for a rate based on about 50 events would be $\pm 30\%$. That would mean the rate of 20.4 would have approximate confidence limits of $\pm 0.30 \times 20.4 = 6.1$. The confidence limits would then be 14.3 to 26.5.

APPENDIX D: Small area boundary designations and selected demographic measures

Area	Name	Boundary Designation	Population Size ¹	Per Capita Income ¹	Median Age ¹
0	State Total	All counties / ZIP codes in Utah	2,042,003	\$14,045	28
1	Brigham City	ZIP code 84302	18,915	\$14,867	30
2	Other Box Elder Co.	Box Elder County except ZIP code 84302	20,712	\$13,231	27
3	Logan	ZIP codes 84321, 84322, 84341, 84332	60,515	\$13,006	24
4	Other Cache/Rich	Cache & Rich Co. except ZIP codes 84321	26,325	\$11,769	26
5	Ben Lomond	ZIP codes 84404, 84407, 84412	39,592	\$13,151	30
6	Morgan/East Weber Co.	ZIP codes 84310, 84317, 84414, 84050 or Morgan	32,686	\$14,757	28
7	Downtown Ogden	ZIP codes 84401, 84402	24,663	\$12,484	31
8	South Ogden	ZIP code 84403	30,696	\$18,185	33
9	Roy/Hooper	ZIP codes 84067, 84315	36,276	\$14,404	28
10	Riverdale	ZIP codes 84405, 84409	23,783	\$15,443	31
11	Clearfield/Hill AFB	ZIP codes 84015, 84016, 84056	45,593	\$11,592	24
12	Layton	ZIP codes 84040, 84041	53,648	\$14,465	26
13	Syracuse/Kaysville	ZIP codes 84037, 84075	29,312	\$14,029	25
14	Farmington/Centerville	ZIP codes 84025, 84014	24,991	\$14,948	24
15	Woods Cross/No SL	ZIP codes 84087, 84054	17,596	\$13,972	25
16	Bountiful	ZIP codes 84010, 84011	44,309	\$17,141	30
17	Rose Park	ZIP code 84116	26,083	\$12,871	30
18	Avenues	ZIP codes 84103, 84114	23,277	\$23,110	35
19	Foothill/U of U	ZIP codes 84108, 84112, 84113	22,917	\$23,761	35
20	Magna	ZIP code 84044	20,128	\$11,315	25
21	Glendale	ZIP codes 84104, 84101, 84110, 84152	20,579	\$11,133	32
22	West Valley I	ZIP codes 84128, 84120, 84170	58,179	\$11,989	25
23	West Valley II	ZIP codes 84119, 84199	40,174	\$12,773	27
24	Downtown Salt Lake	ZIP codes 84111, 84102, 84105	48,215	\$16,691	33
25	South Salt Lake	ZIP codes 84115, 84165	22,416	\$12,582	31
26	Millcreek	ZIP codes 84106, 84151, 84109	55,943	\$18,385	36
27	Holladay	ZIP codes 84124, 84117	46,584	\$21,967	37
28	Cottonwood	ZIP codes 84121	45,933	\$20,675	33
29	Kearns	Zip code 84118	62,462	\$12,057	25
30	Taylorsville	ZIP code 84123	33,294	\$15,877	29
31	Murray	ZIP codes 84107, 84157	30,139	\$17,764	33

Area	Name	Boundary Designation	Population Size	Per Capita Income ¹	Median Age ¹
32	Midvale	ZIP code 84047	27,154	\$14,959	29
33	West Jordan No.	ZIP code 84084	44,308	\$12,100	22
34	W. Jordan, Copperton	ZIP codes 84088, 84006	28,860	\$12,170	24
35	South Jordan	ZIP code 84095	32,401	\$13,936	24
36	Sandy Center	ZIP codes 84070, 84091, 84094	52,784	\$14,260	27
37	Sandy, NE	ZIP codes 84093, 84090	28,948	\$19,615	28
38	Sandy, SE	ZIP code 84092	34,139	\$19,391	25
39	Riverton/Draper	ZIP codes 84065, 84020	37,651	\$12,542	27
40	Tooele Co.	Tooele County	30,371	\$11,953	30
41	Lehi/Cedar Valley	ZIP codes 84043, 84013	14,951	\$11,875	25
42	American Fork/Alpine	ZIP codes 84004, 84003	34,378	\$12,285	24
43	Pleasant Grove/Lindon	ZIP codes 84062, 84042	26,294	\$11,827	23
44	North Orem	ZIP codes 84057, 84059	35,107	\$12,406	23
45	West Orem	ZIP code 84058	27,114	\$12,735	23
46	East Orem	ZIP code 84097	30,579	\$13,712	24
47	Provo/BYU	ZIP codes 84602, 84604	47,328	\$12,581	22
48	Provo South	ZIP codes 84601, 84603, 84605, 84606	47,650	\$9,795	24
49	Springville/Spanish Fork	ZIP codes 84660, 84663, 84664, 84653	44,774	\$12,283	25
50	Utah Co. South	ZIP codes 84651, 84655, 84626, 84633	19,920	\$10,539	24
51	Summit Co.	Summit County	25,301	\$21,809	33
52	Wasatch Co.	Wasatch County	12,441	\$13,616	29
53	Tri-county LHD	Daggett, Duchesne and Uintah Counties	39,334	\$10,055	27
54	Juab/Millard/Sanpete Co.	Juab, Millard, and Sanpete Counties	39,473	\$9,144	29
55	Sevier/Piute/Wayne Co.	Piute, Sevier, and Wayne Counties	21,373	\$10,126	32
56	Carbon/Emery Co.	Carbon and Emery Counties	31,108	\$11,257	31
57	Grand/San Juan Co.	Grand and San Juan Counties	21,083	\$9,333	29
58	St. George	ZIP codes 84770, 84771, 84790	51,395	\$13,574	30
59	Other Washington Co.	Washington County except ZIP codes 84770, 84771, 84790	26,263	\$10,123	29
60	Cedar City	ZIP code 84720	24,424	\$11,485	25
61	Other Southwest Dist.	Beaver, Garfield, Iron, and Kane Counties	19,162	\$10,571	34

¹Population estimates are for 1997. Age and per capita income figures are means, weighted by population count of the ZIP code median values. Source: CACI Marketing Systems, Inc. La Jolla, CA.